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THE WORLD'S LEADING WOODWORKING MAGAZINE

FEBRUARY 1995 • ISSUE NO. 77
Please display until February 13

10 CHOICE PROJECTS

Read all about it ...
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Keep tools sharp!
WET-WHEEL GRINDERS

Kids' Playroom Furniture

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BUILD A CLASSIC...
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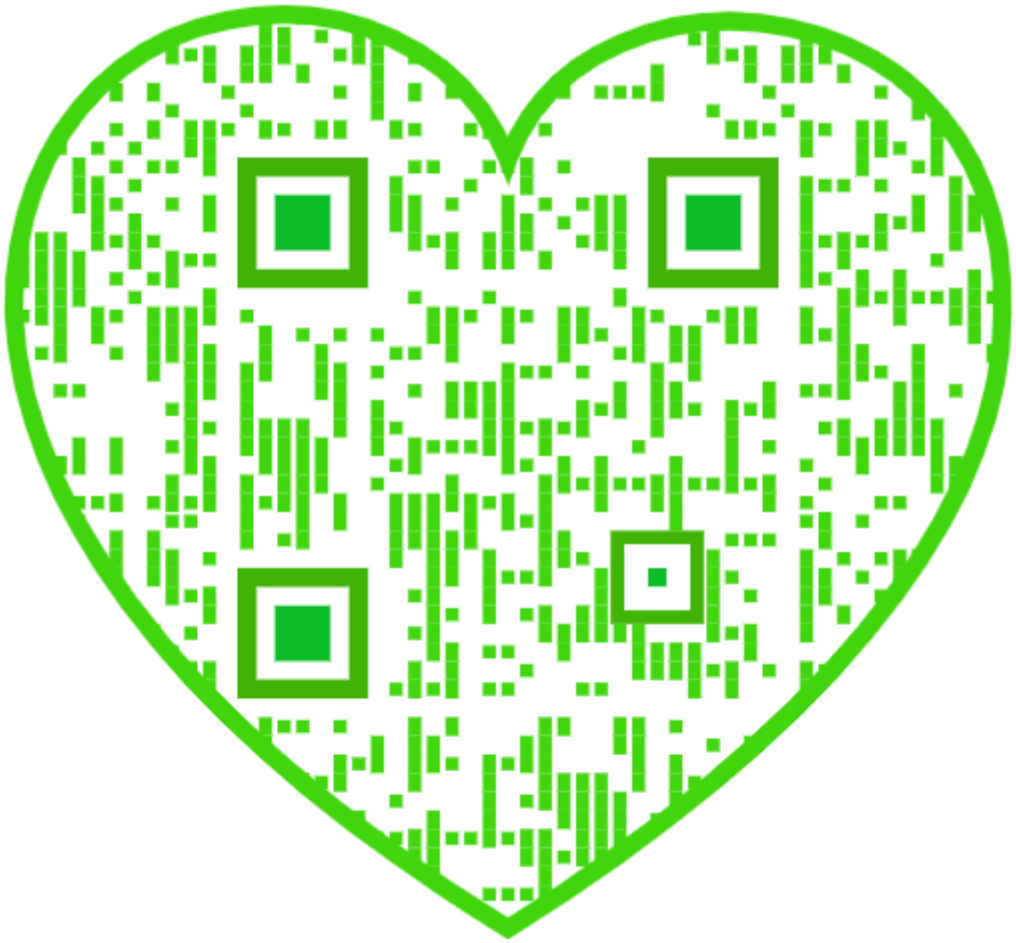

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WOOD®
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THE EDITOR'S ANGLE

WANNA WIN THIS DOGHOUSE

AND A ONE-YEAR SUPPLY OF DOG FOOD?

People go ga-ga over their pets—on that we can all agree. And they spend bags of money feeding, grooming, and housing them, too. Knowing these things, and assuming that a fair number of *WOOD®* magazine readers own dogs, we decided that it's high time we did our part with a project that matches your affection for Fido.

Builder Irv Roberts *right*, Brandy (my dog), and me inspect the doghouse we plan to give away to some lucky *WOOD* magazine reader.

That's why we are building a doggy domicile that will make your dog the envy of all his/her canine friends. It features insulated wall, ceiling, and floor panels, a removable divider that allows for more air movement during the summer months, and a front porch with a roof overhang for sun protection.

But that's not all. The lift-off roof allows for easy clean-up inside, long-lasting cedar roof shingles protect the structure against the weather, and pressure-treated 2×4 skids make it easy to clean underneath the dwelling. In other words, this doghouse is definitely worth howling about.

Earlier this week I took my dog Brandy out to new-grandpa and part-time *WOOD* magazine project builder Irv Roberts' workshop to check on his progress on the project. (We'll publish plans for it in Issue 80, August 1995.) As you can see in the photo *above*, Brandy saw plenty to wag her tail about (she didn't even seem to mind that the structure has a ways to go yet before completion.)

While Erv and I were standing there talking about the finer points of canine accommodations, it occurred to me that some dog-doting reader in our audience might just love to have the doghouse—and a one-year supply of dog food to go with it. So folks, we're going to have a contest.

Here's how to win

If you're interested in showing off your pooch and possibly winning some great prizes, just send us a photo of you and your dog in a humorous pose. Be as creative as you like. We'll do the judging following the deadline, which is March 1, 1995. And don't worry about the quality of your photo. If you win, we'll send a professional photographer to your house to reshoot it, if necessary. We'll also award a runner-up prize (a handsome *WOOD* magazine shop apron) to five other entrants.

For a rundown of our official contest rules, and the address for sending your photo entry in, see *page 17*. Watch for a list of the winners in the August 1995 issue.

Good luck to you and your faithful canine companion. May the best dog win.

Larry Clayton

Print this article

Better Homes and Gardens®
WOOD®
THE WORLD'S LEADING WOODWORKING MAGAZINE
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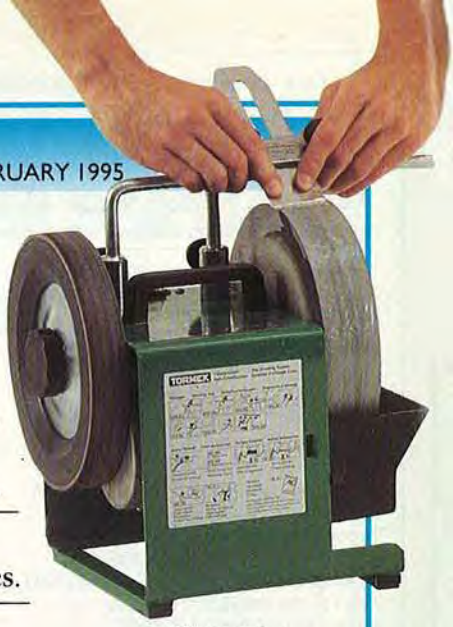
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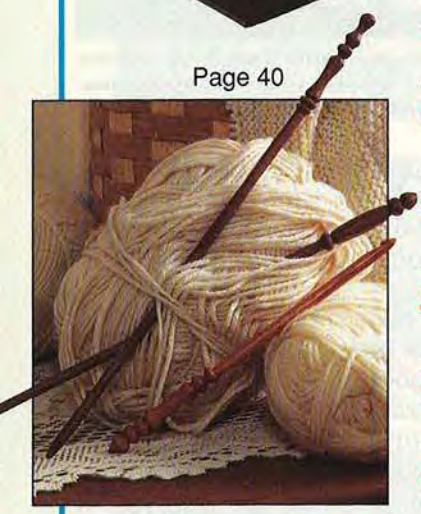

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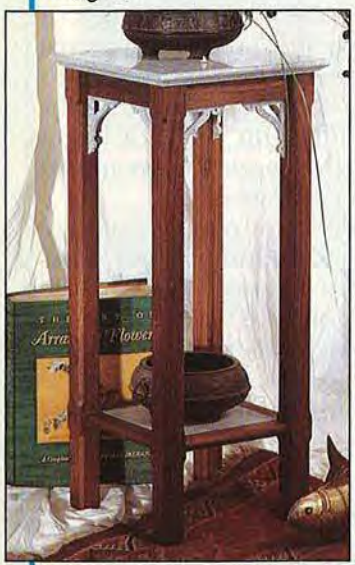

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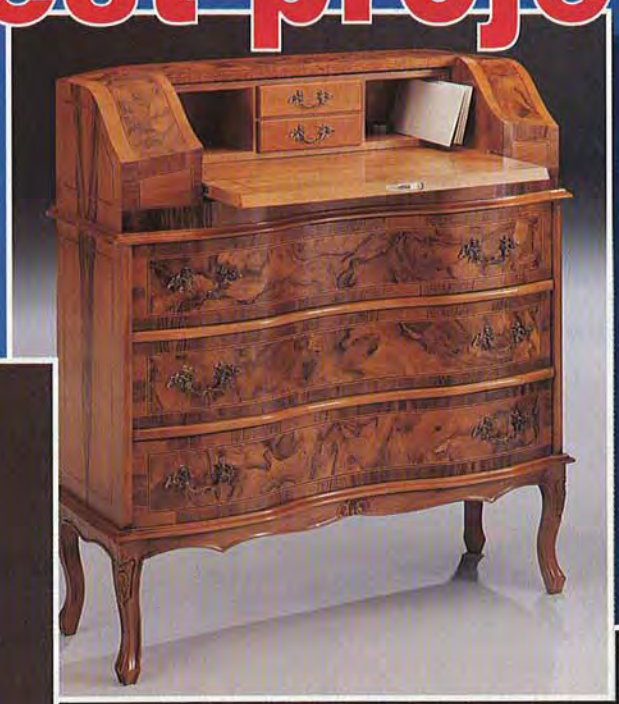
This issue's cover wood grain: Walnut

Your best projects



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ASK WOOD

Whether your woodworker's license reads "Beginner," "Intermediate," or "Advanced," you're bound to have a few questions about your favorite hobby. We can help by consulting our staff and outside experts. Send your questions to Ask *WOOD*®, *Better Homes and Gardens*® *WOOD* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

How to apply water-based finishes evenly and smoothly

I have been delighted with the fast drying time of the water-based polyurethane finish I purchased. However, the finish does not seem to flow as well as the solvent-based polyurethane finish I used in the past. Brush strokes and overlapping marks become a problem, especially when I apply the water-based finish to wide surfaces.

—Jim Davis, Luthersburg, Pa.

Jim, we have had good luck using a short-hair style painting pad to apply water-based finishes to surfaces larger than two square feet. These applicators will apply a smooth, even coat to a 6- to 8"-wide area. Simply apply a stroke of finish, and then apply the next stroke adjacent to it, slightly overlapping the edge of the first stroke.

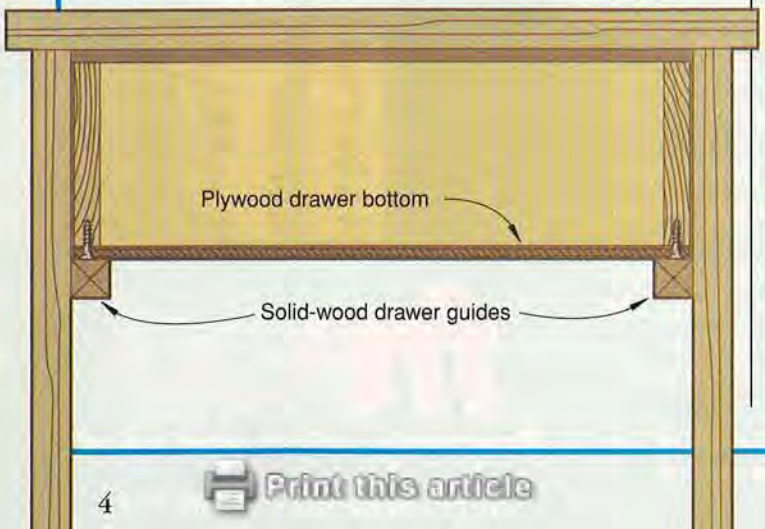
The brand of water-based finishes you use also will affect the smoothness of the finish. We suggest you look at our article "Picking the Perfect Polyurethane" in the October 1994 issue for our comparisons of water-based polyurethane finishes.

Can I glue and screw plywood drawer bottoms in place?

I am making large tool drawers, and I want to use ½" plywood for the drawer bottoms. Does the plywood expand and contract enough to cause warping and twisting of the drawers? Can I glue and screw these bottoms in place?

—Daniel T. Dolebide, LaGrange, Ill.

Yes, Dan, you can glue and screw the plywood bottoms to the drawer sides with less chance of warpage or twisting than if you used solid-wood bottoms. We have used plywood drawer bottoms in many of our projects, fitting the plywood into grooves in the drawer sides and fronts. If you plan to fasten the drawer bottom to the bottom edge of the drawer sides, make sure the bottom is supported by the drawer guides (see drawing *below*).



Taming the wandering mortising bit

I use a hollow-chisel mortising bit on my drill press, running at 600 rpm, to cut mortises for tables and chairs. For some reason, the mortises are not clean and good enough to use without squaring up the sides and ends with a chisel. Do you have any suggestions that will help me improve this work?

—Norbert J. Fischvogt, Troy, Ohio

From your description, we suspect that either the wood is moving or the hollow chisel is deflecting slightly when you cut the mortise, resulting in the uneven cuts on the sides and ends. Here are some ways to deal with this problem:

1 Check the tightness of the work hold-downs, and clear any chips from the base of the hold-down fence. If the wood moves while you cut the mortise, or if wood chips between the workpiece and the fence cause the wood placement to be slightly off, the result will be uneven sides in the mortise.

2 Check that all the fittings on your mortising-tool holder are snug, and check for side-play in the drill press quill bearings. Any looseness in these items will result in the chisel starting at a different distance from the fence with each cut.

3 To ensure a smoother cut, increase the speed of the drill from 600 to 1200 rpm in hardwoods. When mortising in softwoods, set the drill speed at 2400 rpm for chisels between ¼ and ⅜", and 1800 rpm for larger chisels.

4 Keep your hollow chisel and drill bit sharp. A crisp, sharp edge will allow the drill bit and the chisel to cut much smoother and straighter.

5 Don't force the cut. The hollow-ground chisel does require some effort to make a clean cut, but moving too fast can result in deflection of the chisel or workpiece.

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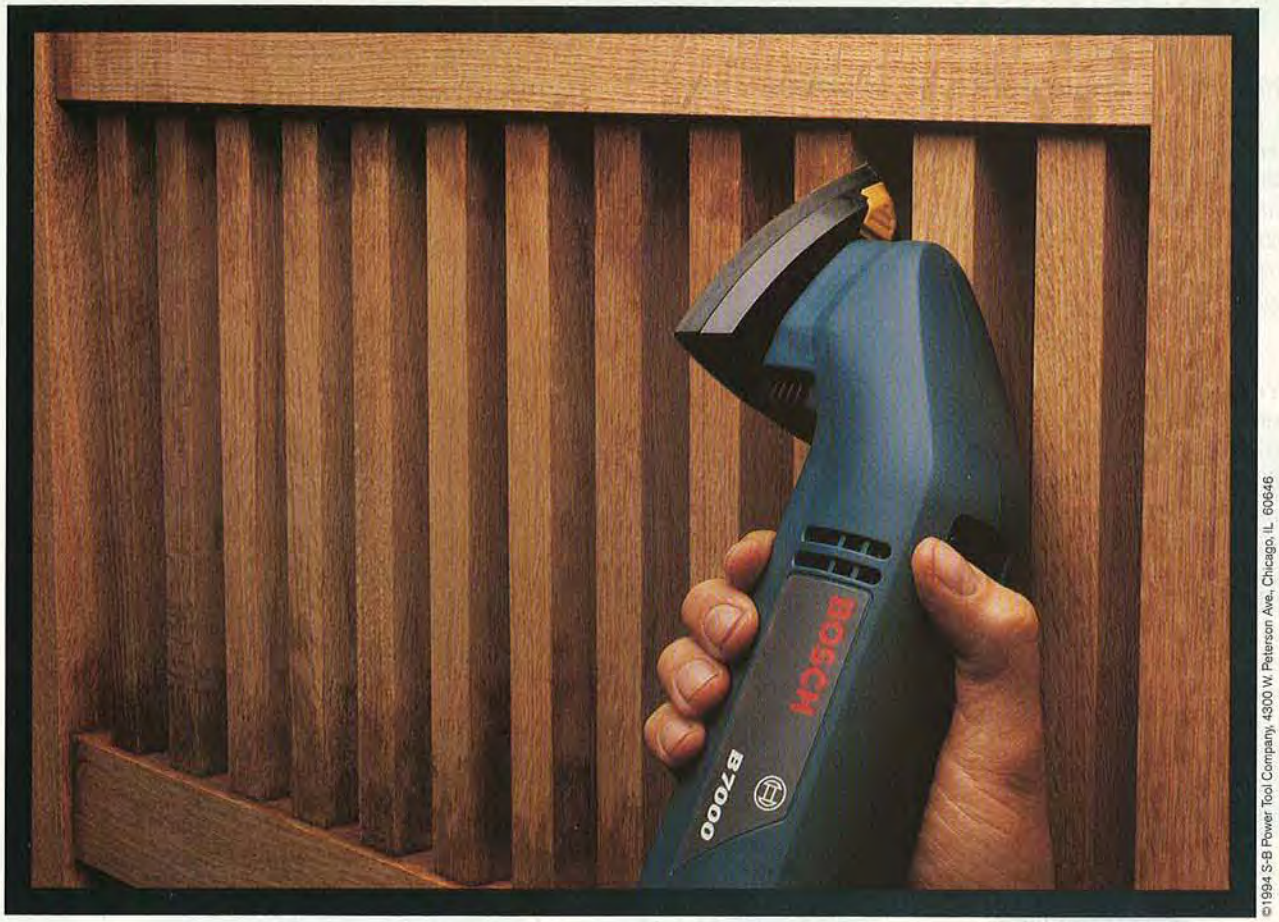

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ASK WOOD

Continued from page 4

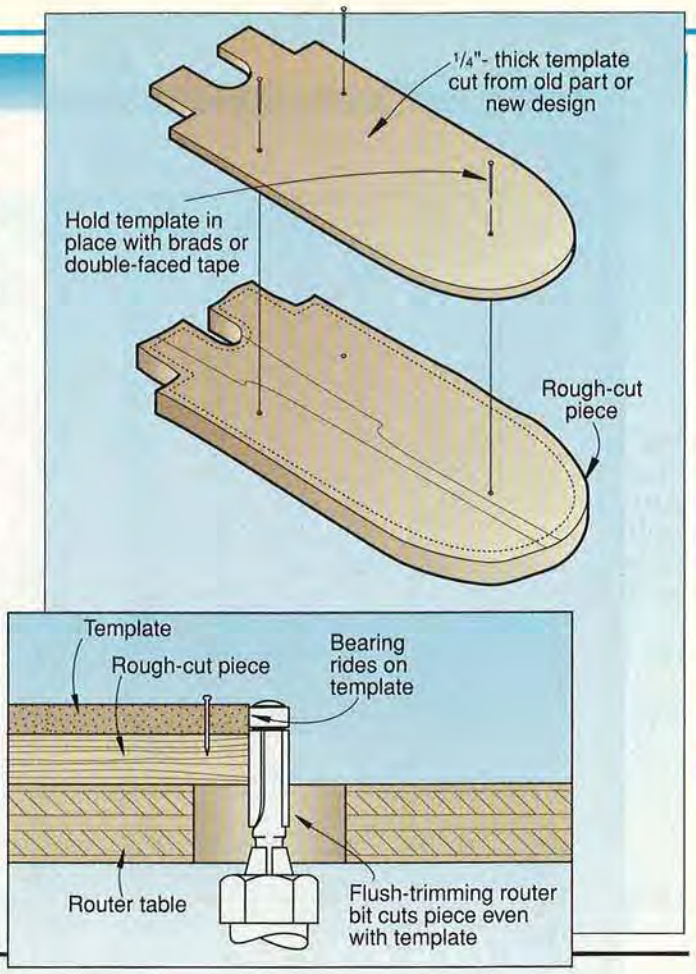
Making a whole bunch of identical parts

I am working with a friend to restore a full-sized antique aircraft with wooden structural parts in the wings. The front part of the wing uses ¼" plywood cut in a very precise shape. I am trying to find a method to make over forty of these parts, and they must be identical in form. Can you suggest a technique for this?

—Al Banholzer, Renton, Wash.

Yes, Al, we can. Rough-cut the pieces with a bandsaw or scrollsaw, then trim them to size using a router table, a template of the wing part, and a flush-trimming router bit (see drawing *right*).

Make the template from ¼" hardboard, acrylic sheet, or Baltic birch plywood, using an intact original piece as the template pattern. Fasten this template to the rough-cut piece with three brads or double-faced tape. Set the flush-trimming bit so that the bearing rides on the template, and the cutter extends just past the top of the workpiece. Then, trim the piece on the router table by feeding the template-workpiece assembly into the rotation of the router bit. Square up any inside corners with a bandsaw or scrollsaw.


¼"- thick template cut from old part or new design
Hold template in place with brads or double-faced tape
Rough-cut piece
Template
Rough-cut piece
Bearing rides on template
Router table
Flush-trimming router bit cuts piece even with template

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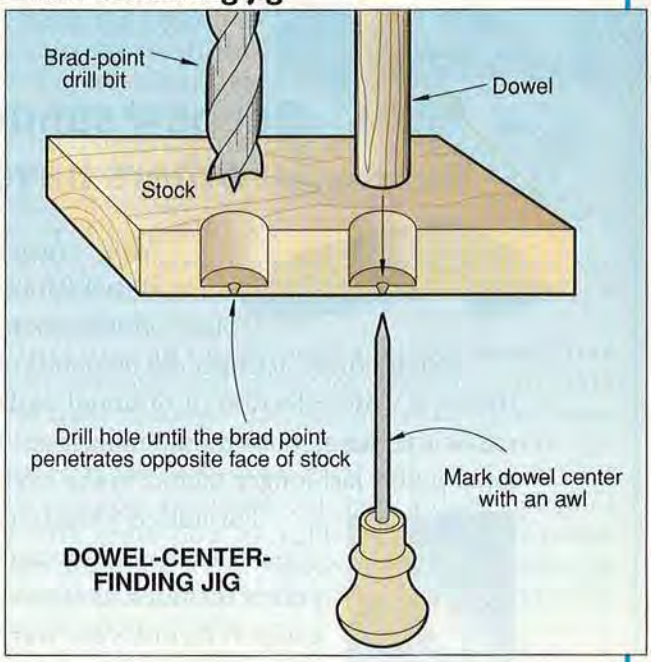
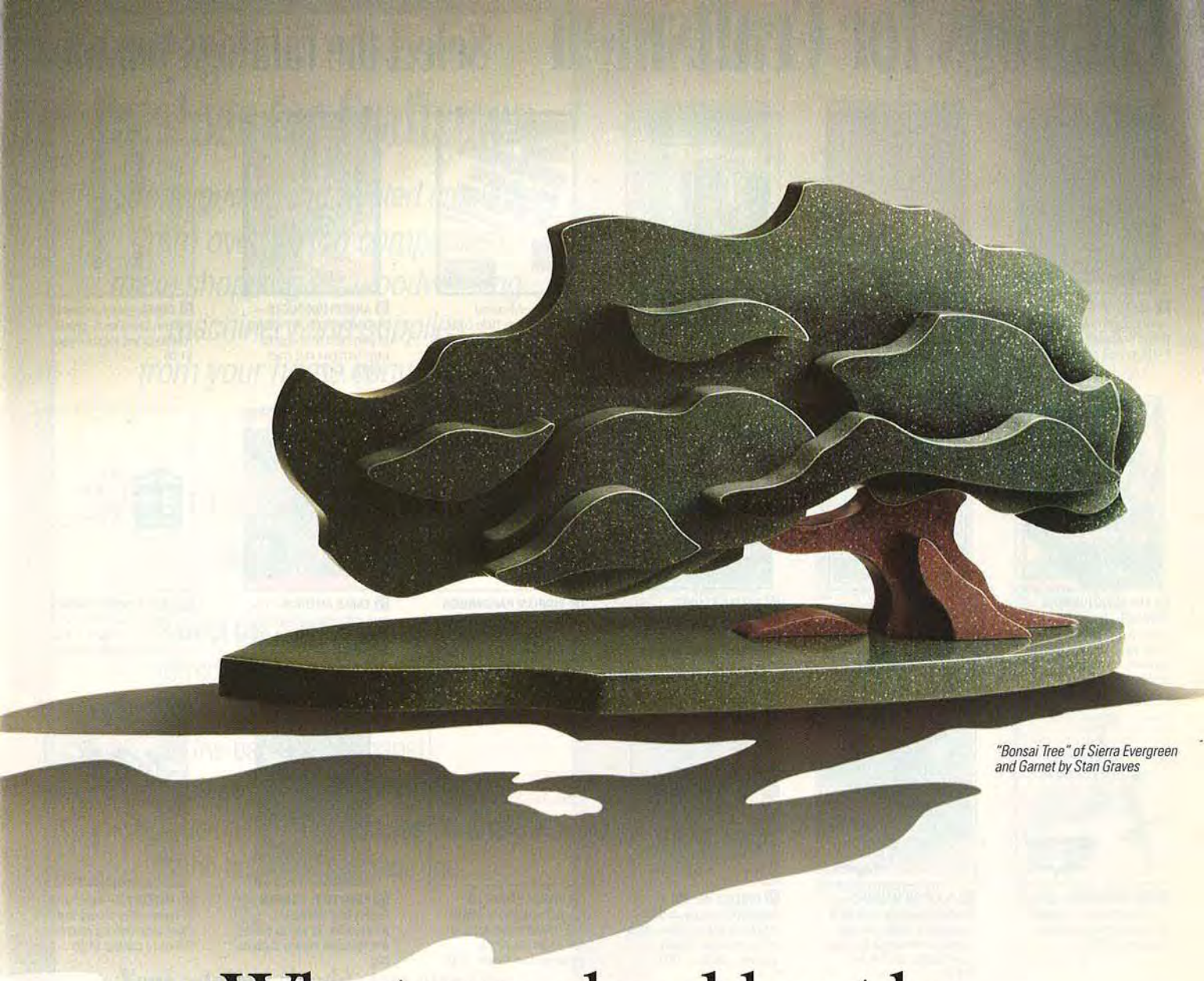
—Richard D. Roach, Johnson City, N.Y.


Brad-point drill bit
Dowel
Stock
Drill hole until the brad point penetrates opposite face of stock
Mark dowel center with an awl

DOWEL-CENTER-FINDING JIG

Yes we do, Richard. You can make the "Collector's Edition Center Finder" as published in our January 1991 issue, or the dowel center-finding jig shown *right*. To make this jig, drill a hole partially through a piece of scrapwood with a brad-point drill bit of the same diameter as your dowel. Drill only far enough to allow the tip of the pilot to penetrate the opposite face of the scrapwood. Slide the dowel into the hole, and use an awl to mark the center of the dowel through the drill pilot hole. When this pilot hole gets too large or out of round, make a new jig.



"Bonsai Tree" of Sierra Evergreen and Garnet by Stan Graves

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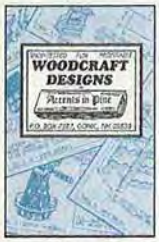

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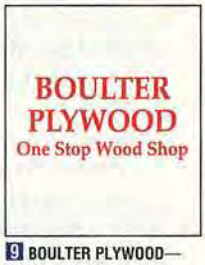

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TALKING BACK

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Talking Back, *Better Homes and Gardens® WOOD®* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

More on hearing protection

Thank you for keeping hearing protection in mind while writing the article "Spotlight on Router Safety" in the August 1994 issue. As an audiologist, I have worked with many people suffering from the damaging effects of excess noise exposure.

I recommend using, at minimum, a hearing- protection device with a Noise Reduction Rating (NRR) of at least 29 when operating a router. However, when you consider using a hearing protection device, also remember that the potential of hearing damage increases with increased time of exposure as well as increased volume. For protection against excess noise exposure when using a router for 2 or more hours, combine an ear plug with an earmuff. This combination should protect you from excess noise for up to 4 hours of continuous router use. I recommend that you direct any questions you have regarding hearing loss to your local audiologist or the American Academy of Audiology at 800/222-2336.

—Sveinar Y. Larsen, St. Cloud, Minn.

Foot switch can save hands

I have an additional safety tip to go along with those presented in "Spotlight on Router Safety" in the August 1994 issue. I use a foot switch to start and stop my table-mounted router. This leaves both of my hands free to control the workpiece, and I don't have to look for the switch to stop the tool. I can keep my attention on (and my hands away from) the fast-moving router bit.

—William C. Collins, Baltimore

For our readers who may be interested in purchasing foot switches that work with routers, we found foot switches offered in these catalogs:

Penn State Industries, 2850 Comly Road, Philadelphia, PA 19154 (call 800/377-7297). Item #FSW, 7-amp. rating, $20 each; #FS2, 15-amp. rating, $29 each.

Total Shop, P.O. Box 25429, Greenville, SC 29616 (call 800/845-9356). Item #99412, rated at 15 amps., $24.95 each.

MLCS Ltd., P.O. Box 4053, Rydal, PA 19046 (call 800/533-9298). Item #9098, 15-amp.-rated foot switch $29.95 each.

To determine which switch to buy, first check the amperage rating of your router (shown on the specification label on the motor housing), and buy a switch rated for an equal or higher amperage. And remember, when using a foot switch with a router or any other power tool, first unplug the tool before changing blades or adjusting your router. The few seconds involved in unplugging the power cord can prevent a much longer trip to the hospital emergency rooom.

Lumber hauling tips from a pro

I have worked in lumber yards for many years, and have seen numerous futile attempts at tying down building materials on light cars and trucks. So, I applaud your efforts to educate your readers on safe lumber-hauling techniques. I have these additional suggestions:

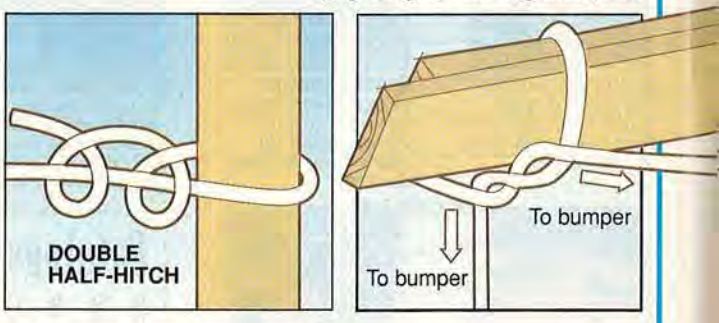
1 We recommend securing both ends of the stock separately rather than using one rope passed over the roof. The rope also should run from one end of the bumper to the stock and down to the other end of the bumper (as shown *below*). This prevents side-to-side shifting of the lumber.

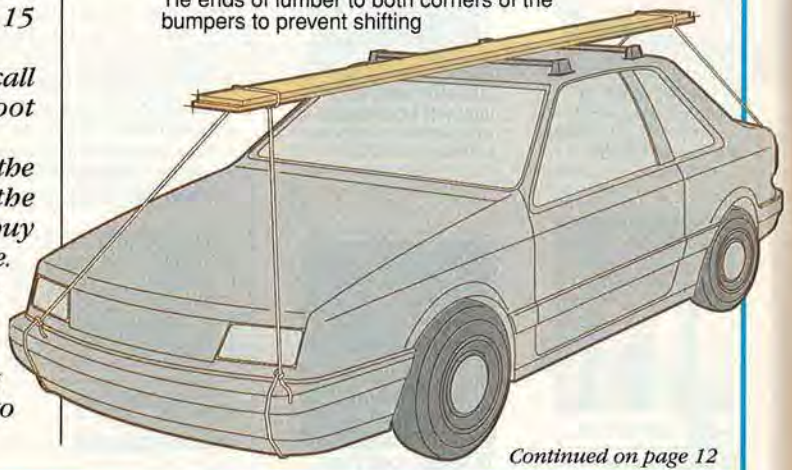
2 Use a double half-hitch to tie the stock to the car (see drawing *below left*). This knot allows a tight loop to be tied around the wood.

3 To avoid damage to the car, we recommend that our customers not fasten more than 100 pounds of lumber on car roof racks. This amounts to about a half-dozen treated 8' long 2 × 4s.

4 If you have a big project or a small car, rent a pickup. In Pennsylvania, you can rent a small truck for around $50 a day, while the fine for failing to secure a load to a vehicle is $100.

Jay Keefer, Monongahela, Pa.





Continued on page 12

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While the human hand is a powerful tool, carving by hand can be painfully slow. That's why we created our new Detail Carver. It gives you hand-carved results – with power tool speed and ease. And you control all the power. The Detail Carver's ergonomic body, two speeds, and five interchangeable chisels let you quickly rough in and precisely finish off every carving project. Relief carving. Incised carving. Sculpting.

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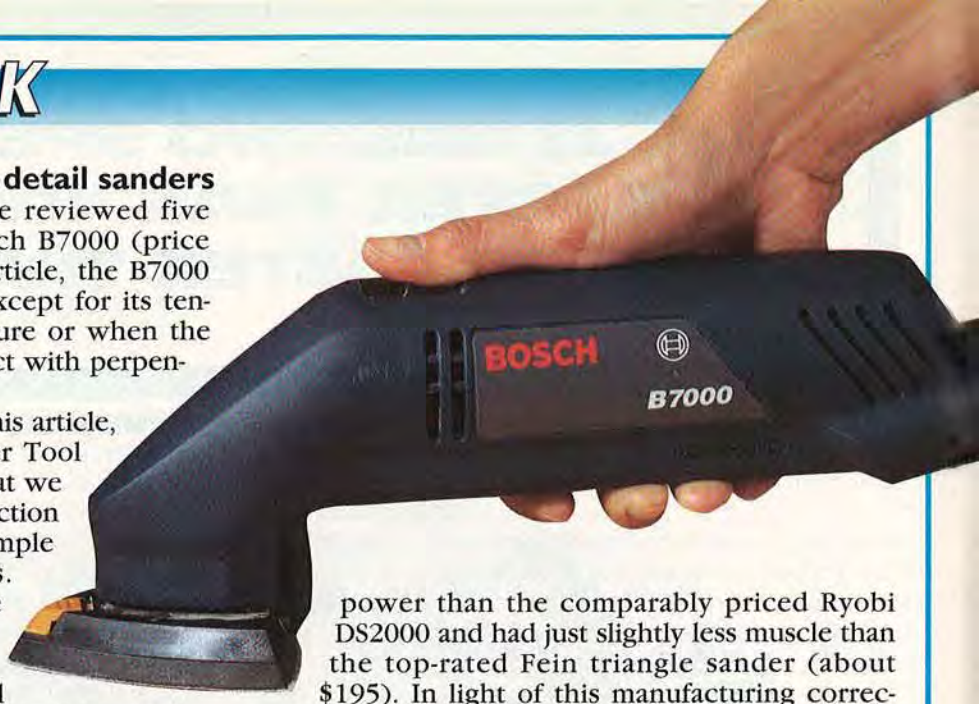
TALKING BACK

Continued from page 10

An update to our report on detail sanders

In the November 1994 issue we reviewed five detail sanders including the Bosch B7000 (price about $75). As reported in the article, the B7000 that we tested performed well except for its tendency to stall under heavy pressure or when the edges of the pad made firm contact with perpendicular surfaces.



Shortly after the publication of this article, Chris Carlson of Skil-Bosch Power Tool Company called to let us know that we must have received an early production model, as current models have ample power under all circumstances. Apparently, a small number of the first units made have motor housings that could allow for a slight shift or misalignment of internal components. This could, in turn, cause a slowdown of the drive mechanism under load. Carlson assured us that the housing has been modified to eliminate this problem.

To verify his claim, we tested a current B7000 for ourselves and we are pleased to report that it did not stall at all in our tryout. In fact, it showed more power than the comparably priced Ryobi DS2000 and had just slightly less muscle than the top-rated Fein triangle sander (about $195). In light of this manufacturing correction, we recommend the B7000 (and its variable-speed version, the B7001) to those of you who want to spend less than $100 on a detail sander. The B7000 features an effective, built-in dust collection system and an easy-to-rotate sanding pad.

—Bill Krier, Assistant Managing Editor

Continued on page 14

Give Yourself Some Breathing Room.

Recent medical studies show that breathing wood dust can be hazardous to your health. The JDS AIR-TECH 2000 will dramatically improve the quality of the air in your workshop.

A powerful 500 CFM motor delivers 350 CFM of filtered air. This will clean the air in a 20 x 20 x 8 foot shop six and a half times per hour.

The JDS AIR-TECH 2000 will remove 99% of dust particles as small as five micron and 80% of the particles as small as one micron.

Our unique design makes both ceiling installation and filter changing quick and easy.

To place an order or for the dealer near you call 1-800-382-2637. And give yourself some breathing room.

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How I Turned My Hobby Into A Successful Craft Business.

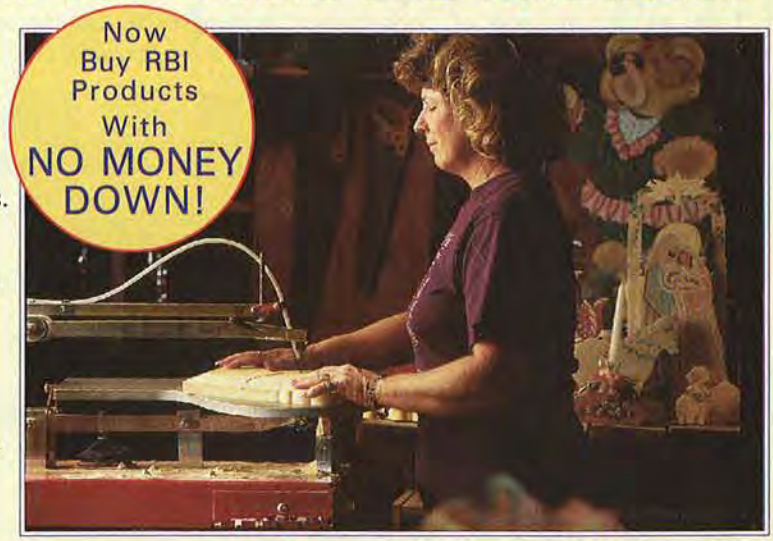
When I first considered starting my own craft business, I knew to produce the type of unique crafts customers would pay top-dollar for, I needed to work with the best materials.

NEW RBI HAWK *Ultra* Precision Scroll Saws.

The Most Advanced Scroll Saws Ever Made!

When it came to purchase a scroll saw, I knew I wanted the best. So I purchased an RBI Hawk Precision Scroll Saw.

With my RBI Hawk Precision Scroll Saw, I now produce the woodworking projects I have always dreamed of creating.



Edges Cut So Smooth They Require No Sanding.

Susan applying the final touches to one of her inspired creations.

Now, I create beautiful crafts and toys, tole painting cut-outs as well as intricate, detailed fretwork and inlays. I really love the fact that my RBI Hawk Precision Scroll Saw cuts edges so smooth it virtually eliminates the need for sanding. With my RBI Hawk, I create projects that my customers will treasure ... year after year.

How I Increased My Business By Dimensioning Wood Myself.

Using her RBI 812 Woodplaner, Susan easily and quickly dimensions her patterns.

To produce wood to just the right dimension for my patterns, my husband and I decided to buy an RBI 812 "3-in-1" Universal woodplaner system. It prepares wood to just the right thickness. Now, I even sell these pre-cut patterns to area craft stores and my own customer's.

RBI Has Everything You Need At Your Fingertips.

When it comes to accessories, RBI has everything I need. They have the very best selection of accessories including blades, work lights, instructional and pattern books, and much more.

Susan

RBI, The Artist's Choice In Scroll Saw Technology.

RBI Hawks are designed and made in the USA for the professional shop and demanding hobbyist. With three sizes to choose from, our 16", 26", and our most popular 20" model, we have the saw that's right for you.

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Patented Quick Change Blade Holder - for the fastest and easiest positioning of saw blades there is.

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E103

TALKING BACK

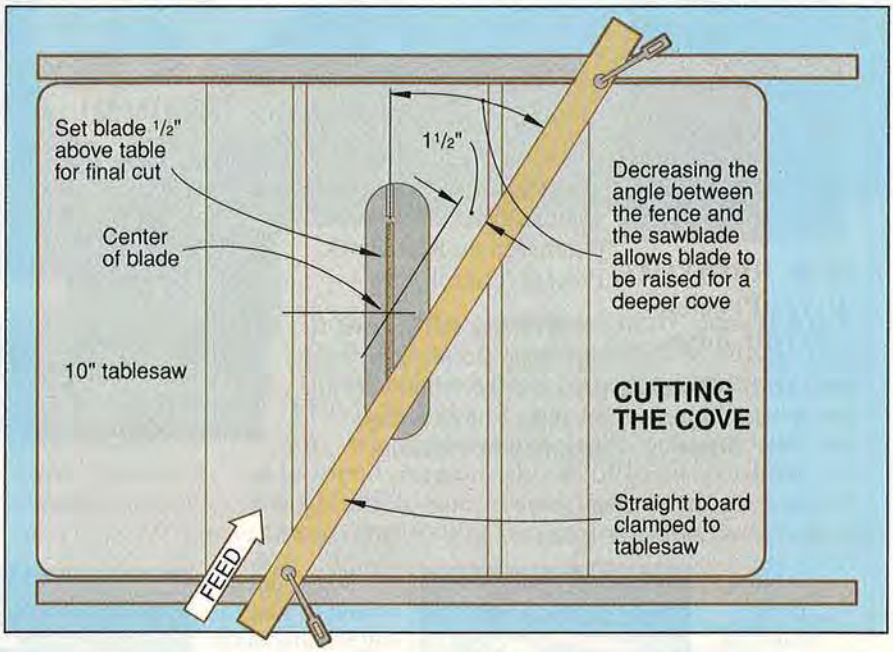
Continued from page 12

He wants to cut a deeper cove

I am in the process of constructing a built-in bookcase, adapted from the "Shelving Showcase" design presented in the February 1992 issue. I increased the width of the cove molding to maintain its proportion in relation to the increased size of my bookcase. However, I am having trouble in increasing the depth of the cove at the same time. What do I need to do to achieve this?

—Lawrence Petersen, Middletown, Md.

There are two primary adjustments for cutting coves on the tablesaw. First, the height of the sawblade controls the depth and width of the cove. And second, the angle at which the wood approaches the sawblade also affects the width of the cove. To increase the depth of a cove within a given width, you will need to decrease the angle at which the wood approaches the sawblade, as shown below, *and increase the height of the blade.*


Set blade 1/2" above table for final cut
Center of blade
10" tablesaw
1 1/2"
Decreasing the angle between the fence and the sawblade allows blade to be raised for a deeper cove
CUTTING THE COVE
Straight board clamped to tablesaw
FEED

Here's the one thing Belgians don't waffle on.

The Robland X31 is as welcomed in European workshops as a home run in the World Series. We put together a 12" jointer, 12" planer, 10" table saw, 50" sliding table, and a shaper with a mortiser. No cheating. No compromises. Some 1100 lbs. of cast iron stability, with three separate 3HP motors. It stays put. It stays true. and it stays neatly in a little corner of your shop. That's why Belgians call the Robland X31 The Intelligent One Man Shop. About the only thing you can't make on it is breakfast.

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Circle No. 615

The benefits of a brittle bond

I have used cyanoacrylate adhesives (CA) for a couple of years, and can testify that what you said in "What woodworkers need to know about cyanoacrylate adhesives" in the January 1994 issue is true. However, you left out an important property of these glues: the brittleness of the joint.

I frequently use a few drops of CA to firmly bond parts I will separate later. The bond is very strong, so the parts don't shift. However, by tapping the workpieces with a hammer, or dropping the pieces on a piece of plywood on the floor, the parts come apart quickly. I then sand off the glue residue.

—Jose A. Mari Mutt, Mayaguez, P.R.

We've been computer bit

The chart *below* contains highlighted corrections for the Bill of Materials in the "Dresser-Top Delight" jewelry-box article in the December 1994 issue. Somewhere between the last proof and the magazine coming off the printing press, every measurement that contained a 1/32" dimension was changed by our computer system. We apologize for any inconvenience this may have caused, and we are intensifying our efforts to prevent similar problems in the future.

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
DRAWERS					
L backs	3/8"	1 1/32"	3 5/8"	C	6
M backs	3/8"	1 1/32"	5 5/8"	C	4
N backs	3/8"	1 1/32"	11 5/8"	C	2
DRAWER GUIDES					
R top	1/4"	3 7/32"	7"	H	6
S middle	1/4"	5 7/32"	7"	H	4
T bottom	1/4"	11 7/32"	7"	H	2

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HEAVY-DUTY ONE PIECE STAND
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6" x 47" HEAVY-DUTY JOINTER

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SALE: $255.
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2 H.P. DUST COLLECTOR

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#EN3104
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LOW PRICE: $380.00
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LOW PRICE: $660.00
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LOW PRICE: $690.00
FREE EXTRA SET OF BLADES A $25.00 VALUE
NEW IMPROVED
8" X 65" SUPER HEAVY-DUTY JOINTER

#EN3302
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(#EN3201 SHOWN)
BUILT-IN DUST COLLECTOR CHUTE
NEW IMPROVED
#EN3201
1-1/2H.P.
110/220V MOTOR
SALE: $335.00
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COMES WITH EN3202'S FENCE SYSTEM
LOW PRICE: $545.00
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10" H.D. TABLE SAW

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SALE: $750.00
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3 H.P. SHAPER

OTHER STAPLER/ NAILER KITS, EXTRA NAILS & STAPLES ARE ALSO AVAILABLE
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MAGNETIC SWITCH IS OPTIONAL
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2 H.P., 110V MOTOR
SALE: $365.00
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12" PLANER

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3 H.P., 220V MOTOR
LOW PRICE: $1295.00
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LOW PRICE: $1395.00
FREE EXTRA SET OF BLADES A $83.95 VALUE
20" PLANER

#EN-BS14N
3/4 H.P.,
110V MOTOR
SALE: $275.00
FREE EXTRA BLADE A $7.50 VALUE
14" BAND SAW

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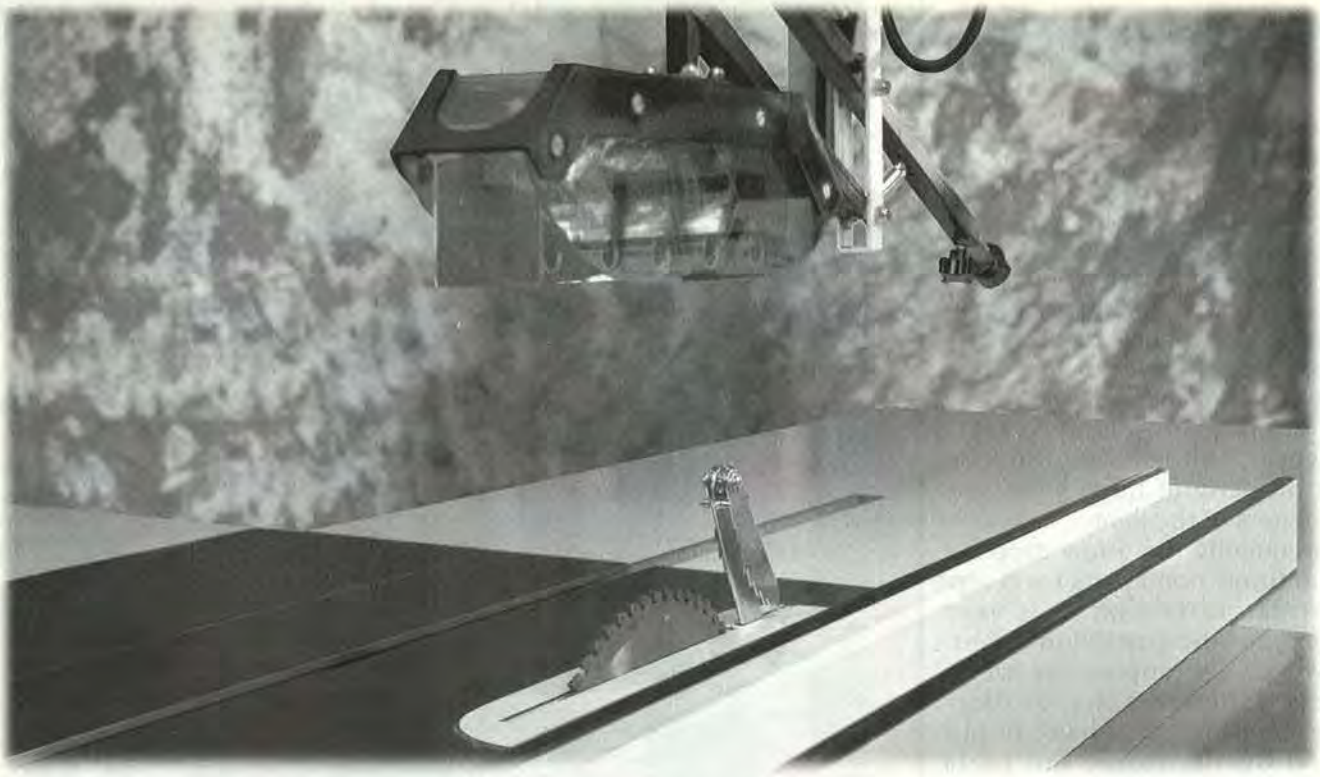

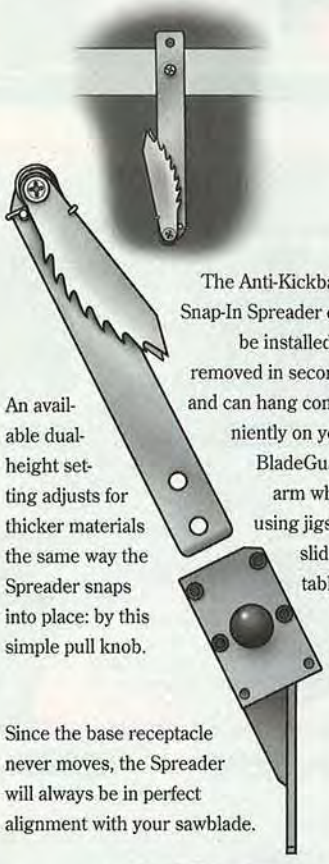

The Anti-Kickback Snap-In Spreader can be installed or removed in seconds and can hang conveniently on your BladeGuard arm when using jigs or sliding tables.

An available dual-height setting adjusts for thicker materials the same way the Spreader snaps into place: by this simple pull knob.

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Send the photo with your name, address, and phone number printed clearly on the back to the address *below*. Entries must be received by March 1, 1995. We assume no responsibility for late, lost, or misdirected entries.

No photos will be returned. The editors will judge your photo no later than March 31, 1995. Photos will be judged based on humor and creativity. Judges' decisions are final. The grand prize is valued at $1,200 for the doghouse and $200 for the dog food. The five runner-up prizes are valued at $19.95 each. Winners will be notified by mail.

The doghouse will be shipped by ground freight. Contest is subject to federal, state, and local laws. Void where prohibited. Applicable taxes are winner's responsibility. For a list of prize winners, send a self-addressed stamped envelope to the address *below*. Entry constitutes permission to use winner's name, hometown, and photograph for promotional and editorial purposes.

Winner will be required to sign an Affidavit of Eligibility and Release. Employees of and the family members of the Meredith Corporation, its agents, affiliates, and subsidiaries are ineligible. Void in Quebec. Entrants must be 18 years of age or older. **(For more information about this contest, see *page 1.*)**

Please send your photo to: **Pampered-Pooch Contest, WOOD® Magazine, 1912 Grand Avenue, Des Moines, IA 50309-3379.**

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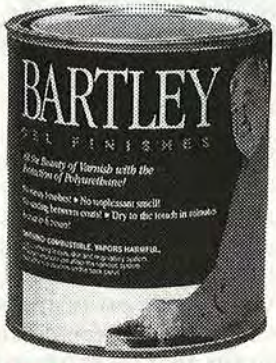

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What woodworkers need to know

POWER-CARVING BITS

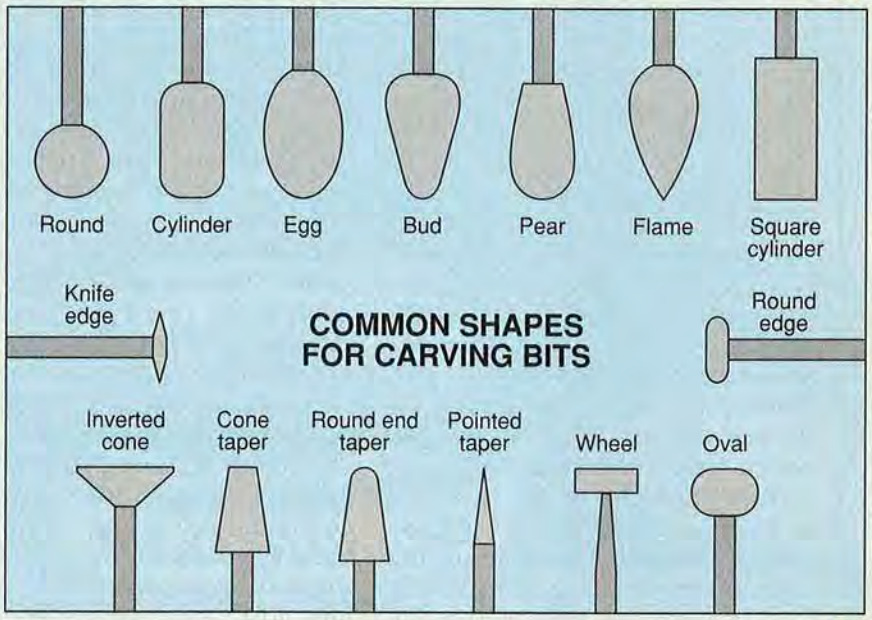
Shopping for power-carving bits, you learn one thing quickly: They come in astonishing variety. Your eyes may glaze over as you survey the array of types, shapes, and sizes. Are you facing a fathomless jumble? Not at all—there is order to the world of carving bits.

Let's have a bit of order

A convenient way to classify power-carving cutters and grinders is by use—roughing, carving, and detailing. Roughing out a carving, for instance, calls for quickly grinding away a lot of wood with little regard for surface finish. Forming feathers or other fine details, though, requires a more precise touch.

To select the proper type of bit, consider how much wood you want to remove, how fast you want to take it off, and how smooth you want the surface to be. We look at some of the popular choices in bits *below*.

As to size and shape, just pick the bit that best fits the job at hand. Some of the shapes you'll find are shown *right*.



Roughing and shaping bits

Print this article

•Karbide Kutzall. For many power carvers, this is the first choice for roughing a figure from a solid block or bandsawed blank. Described as a structured-tooth, tungsten-carbide cutting tool, a Kutzall looks a little like a magnet that's been dipped into iron filings, shown *left*, (1).

Kutzalls come in two grades, silver and gold, (2). Both leave a striated surface, but it's more pronounced with the coarser silver one. (Some carvers favor this texture for decoy heads and the like.) For fastest wood removal, go with a big, silver cutter. The Kutzalls generally cost $10–$25 each, and last a long, long time.

•Steel or carbide burrs. These fluted bits, no. 3 *below*, cut like a file. The single-cut burr's cutting edges wrap in one direction around the body. Flutes on double-cut ones cross at an angle.

Many carvers like extra-coarse, double-cut burrs such as the Pfingst SGX Super-Carbide Cutter (4). These bits pare away wood much faster than other burrs, yet leave a smooth surface. They come in several shapes and sizes.

A burr may be solid steel or may have solid carbide head bonded to a steel shaft. Steel burrs often cost $10 or less apiece; a carbide cutter can cost as much as $50. Though costly, carbide burrs will cut a lot of wood before they dull. Many dealers offer resharpening and reconditioning for carbide cutters.

•Cross-cut cutters. Carvers call these bits *stump cutters*. Made of high-speed steel, a stump cutter looks pretty much like a single-cut burr, except the cutting edges have been crosscut to create orderly rows of teeth around the bit's body, as shown *below* (5).

Stump cutters leave a smooth, sometimes slightly ridged surface. They're available in coarse, fine, or extra fine. A coarse one can work an area down quickly. The finer cutters are suited to more precise work. A stump cutter generally costs $10 or less.

Continued on page 20

What woodworkers need to know

POWER-CARVING BITS

Continued from page 19

Carving bits

•Ruby carvers. These popular abrasive bits, *below* (6), take their name from the mineral particles bonded to the steel body. Over the years, these bits have practically become the power carver's staple tool for refining forms and establishing features.

Available in two grits and a variety of shapes and sizes, ruby carvers cut at a medium rate and leave a sanded-looking surface. They usually cost $5–$10 each.

•Diamond points. Here's another chance to carve with precious stones. Many carvers consider diamond points, like the examples shown *below* (7), to be the crown jewels of carving.

Often thought of as finishing tools or detail-carving bits, there's really no reason diamond cutting couldn't be used at almost any carving stage. As long as the diamond chips remain bonded to the base material, a diamond bit should be able to cut wood practically forever.

Compared to ruby carvers, diamond instruments cut faster, last longer, leave a smoother surface, and, as you might expect, cost more. (But not, surprisingly, a lot more in many cases. We found prices ranging from less than $5 each when purchased in sets to $30 for a large, single bit.) Diamonds are available in a great array of styles and sizes, too.

6 7

Detailing bits

•Texturing stones. Whether fish or fowl (or anything else), your work will look more realistic with the correct surface textures. That's where abrasive stones come into play. But determining which ones to use often calls for some experimentation.

Your dealer will have a colorful batch of stones to choose from—pink, green, white, and blue are usual. Each color denotes a different grit and hardness. For the stones shown *above right* (8), white is the finest grit, thus slowest cutting. Where the colors rank in relation to each other seems to vary among manufacturers; ask your dealer for specific advice.

Selecting texturing stones isn't a precise science. Try different combinations of color and shape until you find the ones that give the look you want. Since stones only cost a buck or two each, you can afford to fool around with a lot of them.

8

Sizing things up

When buying bits from a catalog, you may find the diameter designated by a three-digit ISO number, such as 018 or 070. To convert that number to millimeters, insert a decimal point between the second and third digit. Thus, the 018 bit in the example is 1.8 mm diameter and the 070 is 7.0 mm.

Shanks are 3/32" for most bits, 1/8" for some. Big carbide bits and Kutzalls have 1/4" shanks. Before buying one of these biggies, confirm whether your rotary hand tool or flexible-shaft handpiece will accept a 1/4" collet. Most handpieces will, most rotary hand tools won't.

Keep your bits clean

When cutting performance declines, don't assume that your bit is worn out. More likely, it's just loaded up with wood fibers and resin. Cleaning will probably revive it.

A brass-bristle brush, about the size of a toothbrush, cleans light buildups from everything except stones. Heavier buildup usually yields to oven cleaner. To quickly clean a clogged Kutzall, blast it for a few seconds with your propane torch, then brush away the burnt wood.

A crepe sanding-belt cleaner works fine on stones. For diamond points, buy an inexpensive dressing stone. For longer bit life, store them with their shanks standing in holes drilled in a block of wood.

Where to find them

If you can't find the bits you need locally, try these mail-order suppliers. Call or write for a catalog.

Craftwoods
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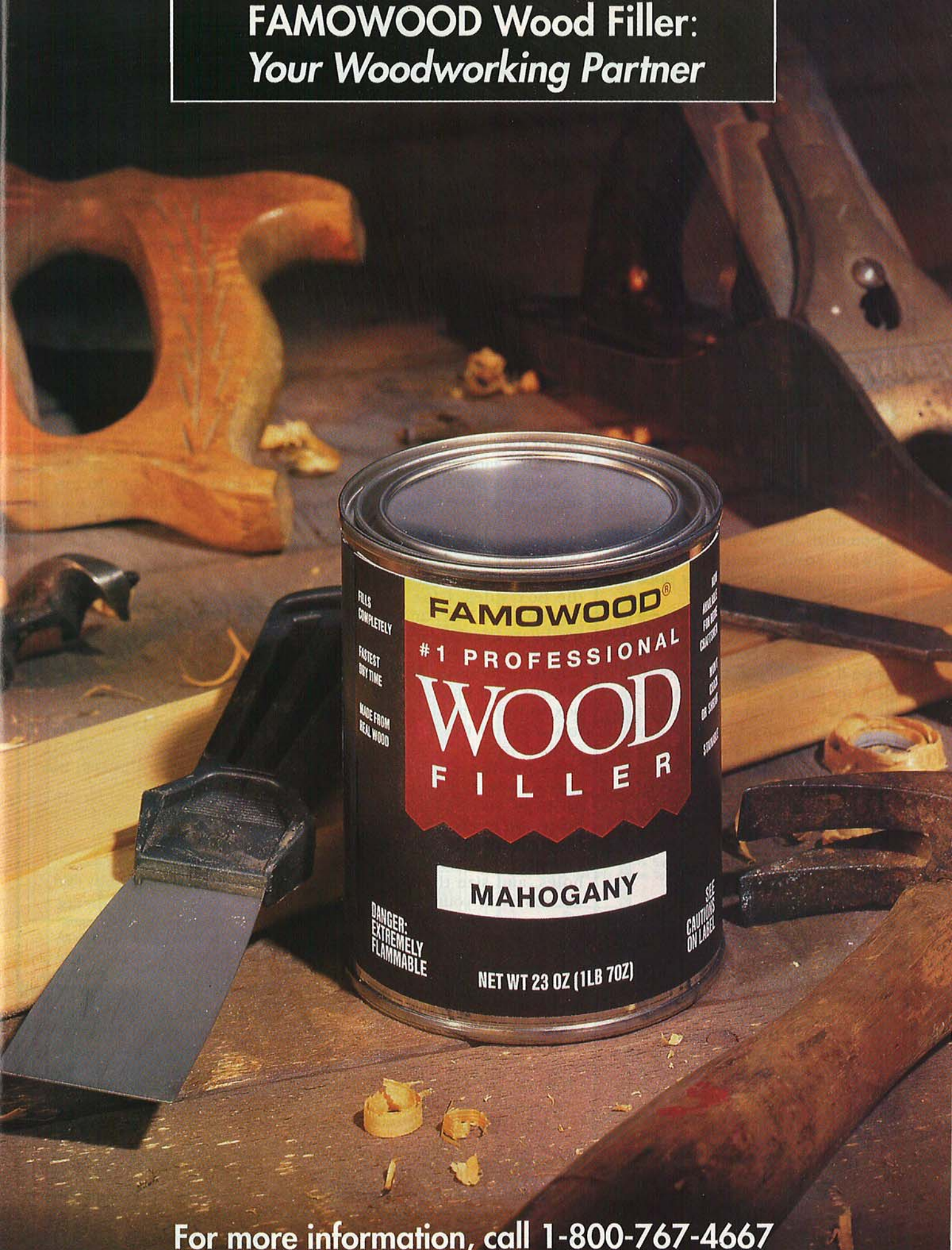

For more information, call 1-800-767-4667

TIPS FROM YOUR SHOP (AND OURS)

Do you see a chip separator for your dust collector in the photo *above*? If not, just take a gander at Nolan Thaler's prize-winning shop tip, *right*, for a clue. Nolan's trash can-turned chip separator serves to remind us how the overlooked items in our shops often contain hidden potential. All we have to do is apply some creative brainstorming, and eureka, out pops another shop tip.

When the inspiration for a new tool accessory, jig, or fixture strikes, I certainly hope you'll take a few moments to let us here at *WOOD*® magazine know about your idea. If we choose your tip, we'll pay you $40, plus you'll get a shot at winning a new tool for the top tip. Just send a brief description of the idea and a drawing or photo to:

Tips From Your Shop
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We try to publish original shop tips, so please send your idea to only one magazine. Also note that we cannot return your submissions. Thanks, and keep those shop tips coming.

Tom Jackson
General Interest Editor

Nix the big chips with a homemade separator

Dust collectors keep your shop clean, but big chips fill up the bags rapidly. Cyclone separators divide the fine sawdust from the chips, but they're expensive.

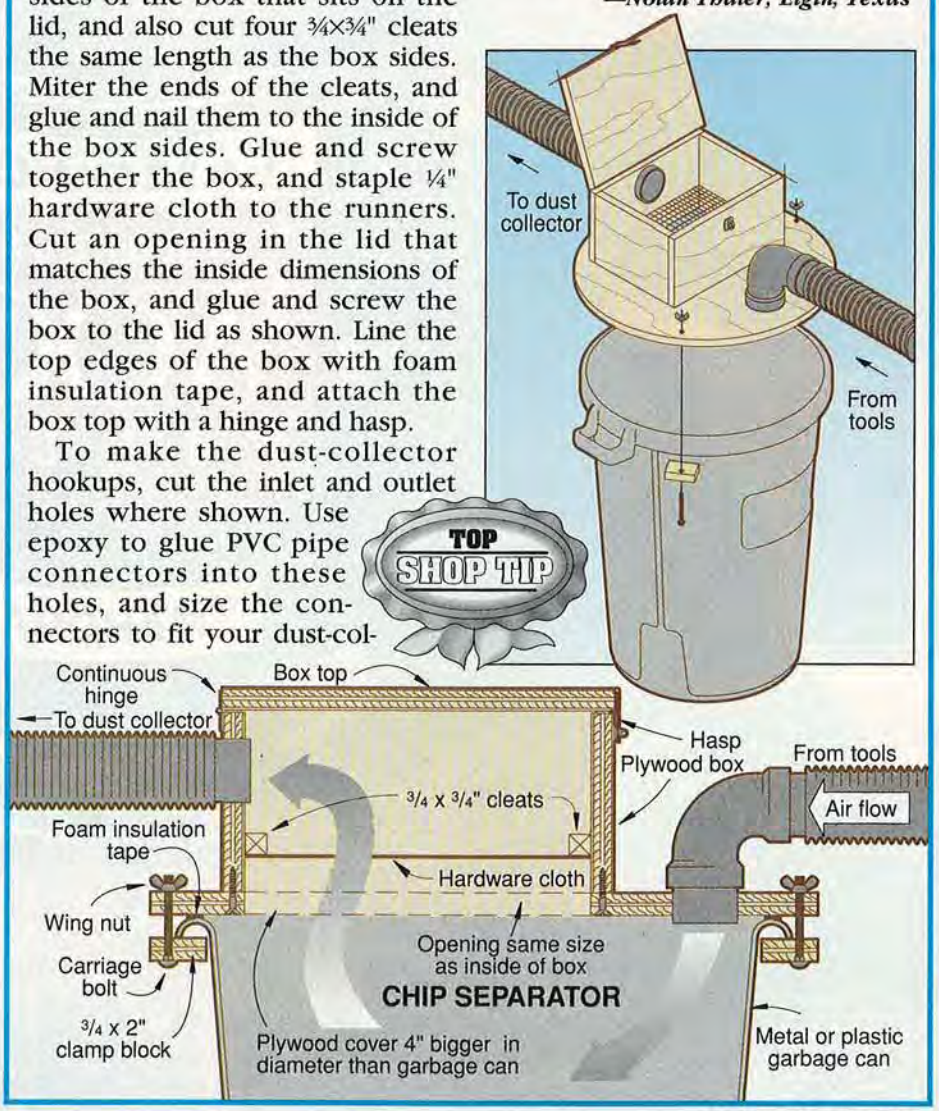
For submitting the top shop tip, Nolan will receive a Porter-Cable model 447 Framer's Saw.

TIP: You can build your own low-cost chip separator from a few pieces of ¾" plywood and materials available at any hardware store. Start by cutting the lid of your separator 4" larger in diameter than the garbage can you plan to use. Attach adhesive-backed, foam-insulation tape to the bottom of the lid where it will rest on top of the garbage can.

Now, cut out the top and four sides of the box that sits on the lid, and also cut four ¾×¾" cleats the same length as the box sides. Miter the ends of the cleats, and glue and nail them to the inside of the box sides. Glue and screw together the box, and staple ¼" hardware cloth to the runners. Cut an opening in the lid that matches the inside dimensions of the box, and glue and screw the box to the lid as shown. Line the top edges of the box with foam insulation tape, and attach the box top with a hinge and hasp.

To make the dust-collector hookups, cut the inlet and outlet holes where shown. Use epoxy to glue PVC pipe connectors into these holes, and size the connectors to fit your dust-collection system. Attach the lid to the garbage can with the clamping blocks, and hook up your dust collector. When you start sucking up dust, the heavier material will fall to the bottom of the can, and the fine dust will be drawn into your dust collector.

—Nolan Thaler, Elgin, Texas



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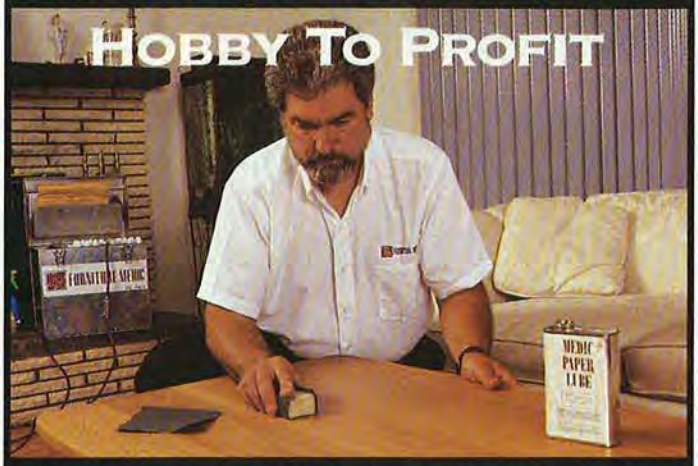

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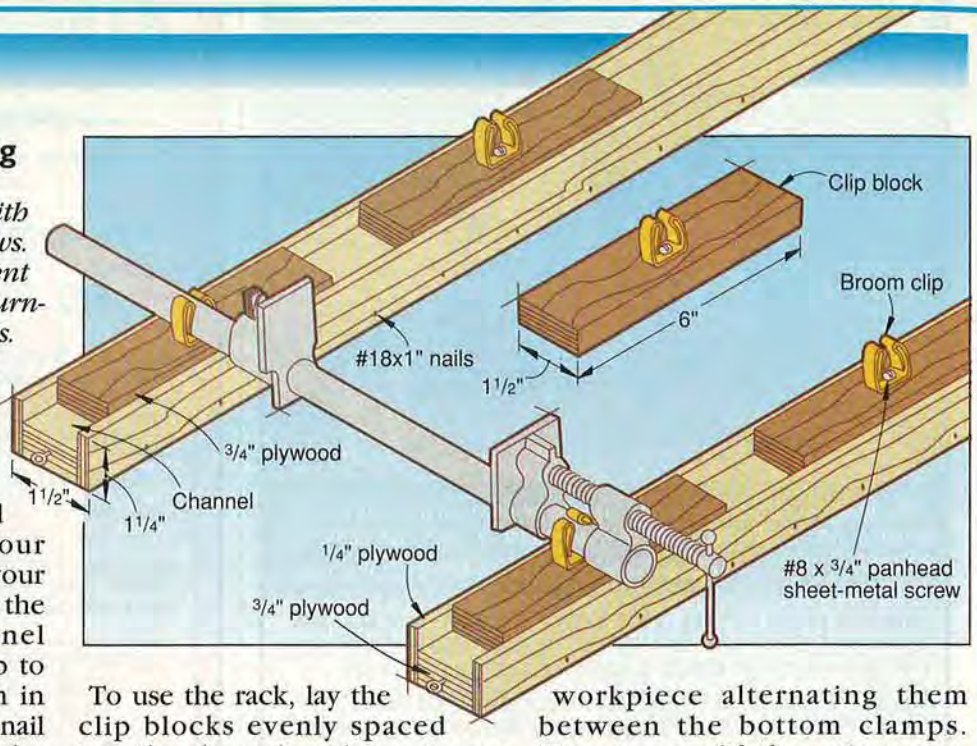
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 22

Pipe-clamp rack keeps big glue-ups under control

Most pipe clamps are made with flats on the bottoms of the jaws. But that doesn't always prevent them from tipping over and turning your glue-ups into disasters.



TIP: Build this pipe-clamp rack from plywood, and your clamps will stay put. For the base of the channels, rip two strips of ¾" plywood 1½" wide and as long as your bench or glue-up table. Cut your clip blocks about 6" long from the same material as the channel bases, and fasten a broom clip to the center of each, as shown in the illustration *right.* Glue and nail ¼"×1¼" plywood sides to the channels, and screw in an eyescrew in one end of each channel. Use the eyescrew to store the racks on a wall.

To use the rack, lay the clip blocks evenly spaced into the channels and secure your pipe clamps in the broom clips. Place your workpiece onto the pipes and tighten the clamps. Then, put clamps on top of the workpiece alternating them between the bottom clamps. Now, you can lift the entire assembly out of the rack with the clip blocks still attached and set it aside to dry.

—William N. Szucs, Middleburg Heights, Ohio

Continued on page 26

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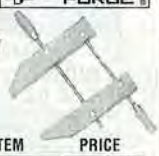

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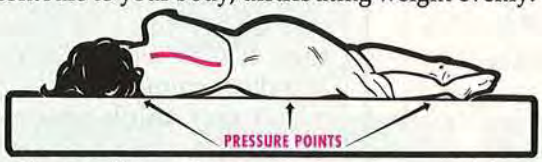

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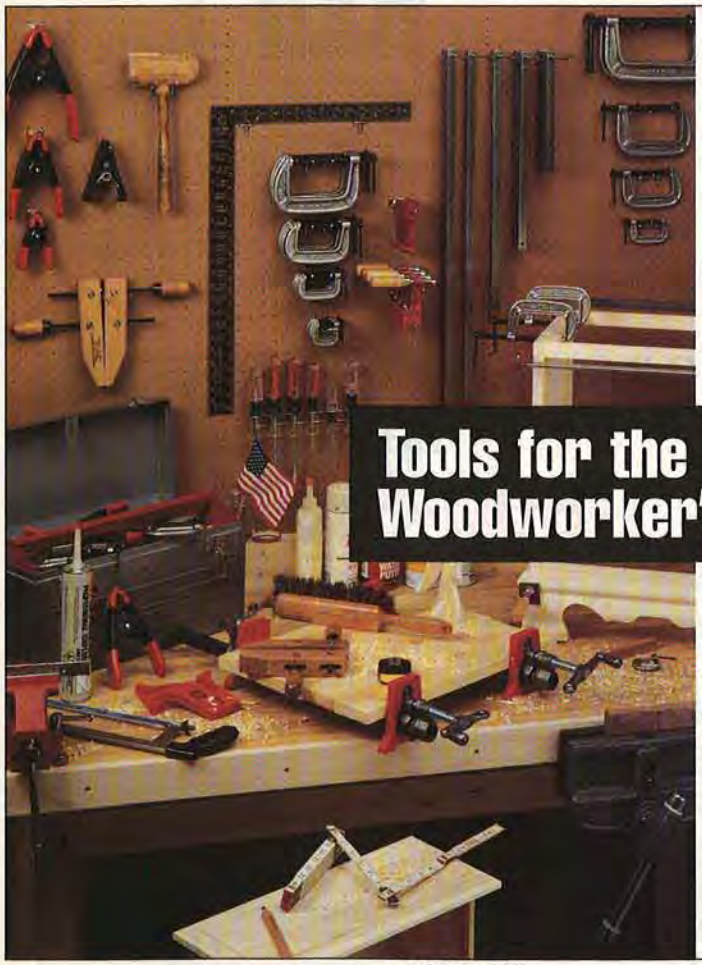

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Continued from page 24

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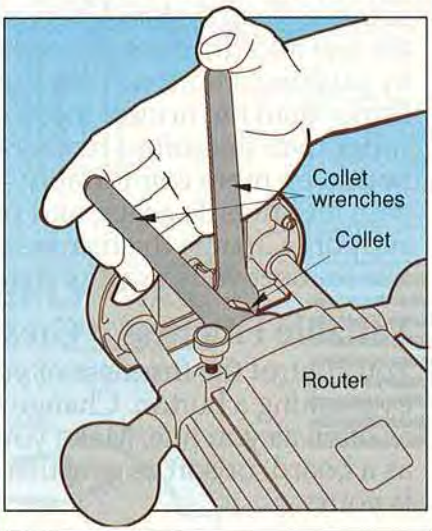

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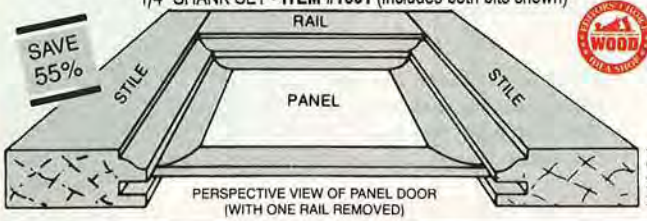

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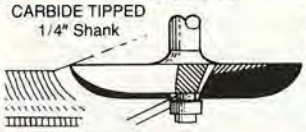

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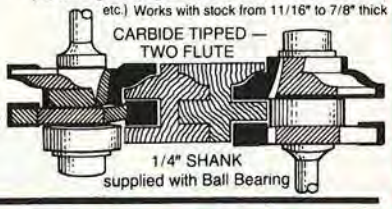

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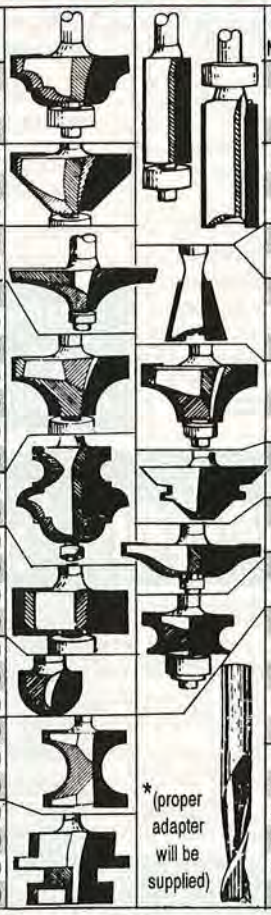

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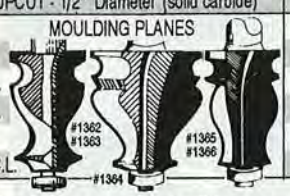

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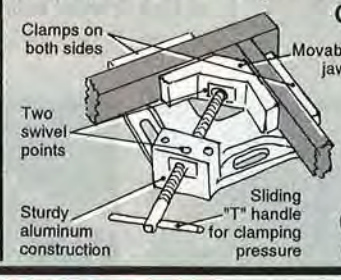

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BIRDS OF A FEATHER

Virginian Robert Swain captures the past with his stylized marshland decoys

From the vantage point of his dock on Hunting Creek, Bob can watch shorebirds of all types as they feed at low tide. The heron, the largest of his shorebirds, sells for $450.

Prior to the 1920s, shorebirds were extensively hunted along the coastal areas of the eastern United States. From the beaches of Cape Cod to the marshes and tidal estuaries of South Carolina, hunters set out decoys by the dozen to lure their game. And local carvers, using the simplest of tools, became adept at turning out wooden facsimiles of curlews, yellowlegs, dowitchers, peeps, ruddy turnstones, plovers, sanderlings, and other species to meet the demand.

Unlike the highly detailed, lifelike duck decoys found at carving competitions, however, shorebird

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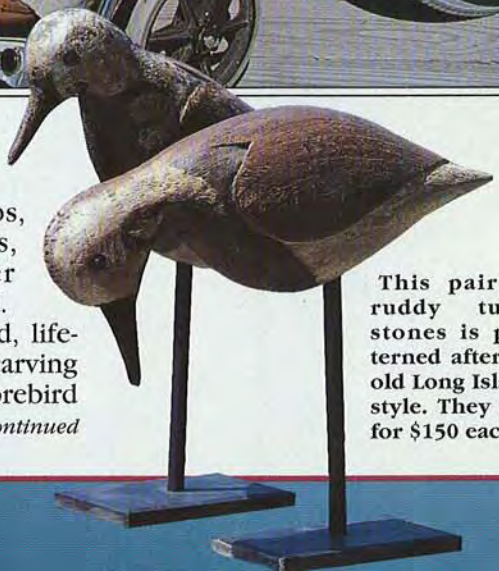

This pair of ruddy turnstones is patterned after an old Long Island style. They sell for $150 each.

BIRDS OF A FEATHER

decoys or "stools" as they are called, were always simple. While their shapes faithfully represented the different types of birds, the finishing and painting only hinted at the original. And because the decoys were set out by sticking them into the mud or sand, a single stick served as legs.

Today, just a few original decoys remain from the thousands that were in use when shorebirds could legally grace a dinner table. Yet, the appeal of these stylized symbols of a past time has never diminished, encouraging present-day carvers to take up the knife. Among the best to do so is native Virginian Robert Swain.

Detail takes a back seat to style

"The old-time carvers didn't spend days shaping out and finishing a bird—it didn't pay. So I don't either," says Bob Swain as he turns a freshly finished peep in his hands. "I can do about four of these in a day. And I do them in the traditional manner."

No matter how short the time it takes to produce one, Bob's birds have earned him fame. In eight years, the fifty-year-old's work has reaped recognition at wildfowl and art shows all along the Atlantic shore and as far away from home as New York City, where his shorebirds were featured at a special Virginia-crafts exhibit in Bloomingdale's department store. And on his customer list you'll find collectors' names from across the nation. Not bad for someone who began his carving career on a hunch.

"My father had a feed and farm supply store in a small town near Parksley, Virginia, then I took it over," recalls Bob, who became a parapalegic in a 1965 auto accident. "When my turn came, I turned the business into a garden and lawn supply center. And it did very well." But by the mid-1980s, Bob could sense an end to the local building boom, and sold out.

"I was looking for something to do, and a decoy-carver friend of mine named Mark McNair suggested that I give carving a try," says Bob. "He said that my hobby photography showed that I had a good eye. In a short time, I learned a lot from him that otherwise would have taken me a decade or more."

In 1986 Bob carved his first decoy, a ruddy duck. "Someone even wanted to buy it," he laughs. "But I didn't sell it. I sold the second one, though." Even with immediate success, it wasn't long before Bob turned his attention to shorebirds. "I guess it's their sculptural quality that I like. They don't have to be—and never were—detailed," he explains. "I can appreciate highly detailed work, but I think that once you look at it, it becomes static. A realistic decoy never changes. But when you look at a stylized shorebird, you always get a new impression of it."

When shorebird hunting was legal, the hefty curlew provided a plentiful meal. Fitted with beaks of carved oak, Bob's curlew decoys cost $175 each.

Old-time techniques still work

Only a bandsaw dates Bob's shop to this century. Otherwise, his workshop on Hunting Creek, a tidal waterway a few miles from Chesapeake Bay, appears as if it had time-traveled from the 1800s.

For shaping the bandsawed forms of Atlantic white cedar, Bob wields a small hatchet. Like a salad chef's slicing and dicing, he accurately hacks the wood with the razor-sharp tool. Quickly, it begins to take shape. In less time than it takes to cut up a cucum-

Shunning motorized tools as much as possible, the carver works the white cedar block to rough shape with a razor-edged hatchet on a chopping block made from an old stump.

ber, Bob has the dowitcher decoy in rough, ready for rasping.

"This is a No. 49 [fast cutting] cabinetmaker's rasp, and nothing beats it for smoothing," says Bob as he nestles the bird against his leather shop apron. With deft strokes, he pushes the steel across the wood, sometimes with the grain, sometimes against. "For curved necks, I can use a spokeshave, but with either tool I don't go for real smooth," he notes. "Leaving it a little rough makes the paint cling. And it adds to the aged look."

To the dowitcher body Bob will glue on a one-piece head and neck. For long-necked birds, such as herons, that often feature a curved or curled neck, the carver assembles the neck from three pieces. Long bills that would easily break if made from white cedar, he carves from oak or other harder woods, then attaches them to the heads.

What details Bob requires on his shorebirds—like eyes—he gets with the aid of his bench knife. He also uses the knife to make the cuts that define wings, nostrils,

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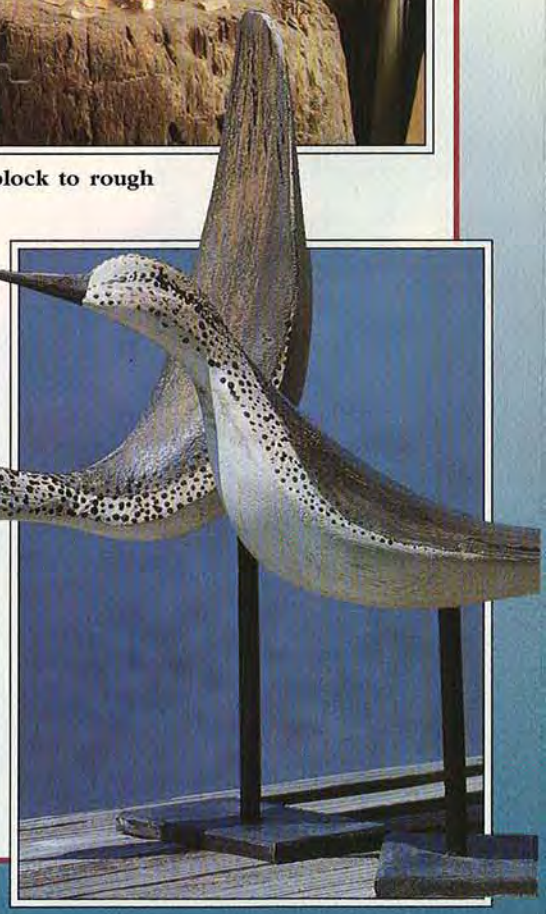


Called peeps because of their call, these graceful shorebirds epitomize the Swain style. At $50 each, they usually sell in naturally-posed pairs.

bill indentations, and other minute changes of shape. But you won't find him using a power carving tool and its bits. He frankly doesn't feel comfortable around power tools.

"I have to use the bandsaw to cut out the blanks from the 6×8" cedar blocks, but I don't like doing it. Machines kind of scare me," he admits. "Besides, the hand tools I use have been relied on for more than 100 years. And I try to keep things traditional."

Distress from a puff of smoke

Following a decoy's rasping, Bob burns it. No kidding! "Burning the wood—actually scorching it—smoothes the grain fibers out. But it also pits the body in places, as if it were weathered," says Bob. That said, he wipes a section of the decoy with mineral spirits, strikes a wooden match, and touches it to the wood. Poof!

He watches the flames intently, turning the decoy around and upside down to direct the "damage." Then, satisfied, he blows out the flame.

"I can't describe to you exactly what effect I'm looking to get before I blow out the fire, but I know it when I see it," he chuckles as he rubs more fluid on the wood. Again, the lighted match, the flame, the smell of seared cedar. Bob holds the flaming bird away from his body, out from the wheelchair. Then he puts it out.

"I burned myself one time pretty bad," he says. "I had just blown out a flame and started to head up the ramp to the house. But I could smell something still burning. I looked, but there wasn't a fire on the shop floor or anywhere. Then I noticed my pants leg, and found the flame. You see, I don't have any feelings in my legs and couldn't tell I was on fire. So I got a real good burn. But that was the only time." [Note: *WOOD*® magazine does not recommend using flame as described in this article. See *page 44* for an alternative method of distressing wood and weathering a finish.]

Following the smoothing of the body, which Bob does with a rasp, he rubs paint thinner on the decoy and sets it afire to effectively distress the wood.

A flaming finish for shorebirds

When it comes time for finishing his decoys, Bob can't get enough of fire. But his work never goes completely up in smoke. Flames actually speed the process.

"I never did have great quantities of patience. So, I started the burning to make the paint dry more quickly," he remarks.

Bob's preferred paint—Ronan's Superfine Quick-Drying Japan Colors—does set up fast for an oil-

based enamel because it's intended for use in the sign trade. That is, if it were applied with a brush. Instead, though, Bob resorts to the old ways again, and mostly uses sticks.

"Those old carvers didn't have money for fancy brushes," says Bob. "They just carved the end of sticks and dabbed the paint on for feathers. And it goes fast that way.

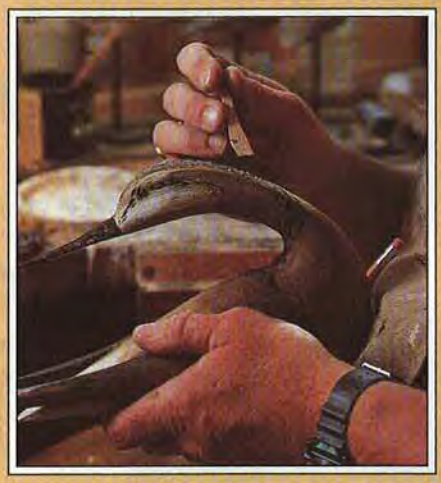
"Instead of using a 000 brush to paint in stripes for feathering, I just shape the end of a flat stick and dip it in the paint. Then it's dab, dab, dab, right down the bird [see photo *right*]. For the little scallops that indicate overlapping feathers, I just roll some sandpaper into a small half tube, then slide it on the end of a dowel, tape it in place on the stick, and start painting."

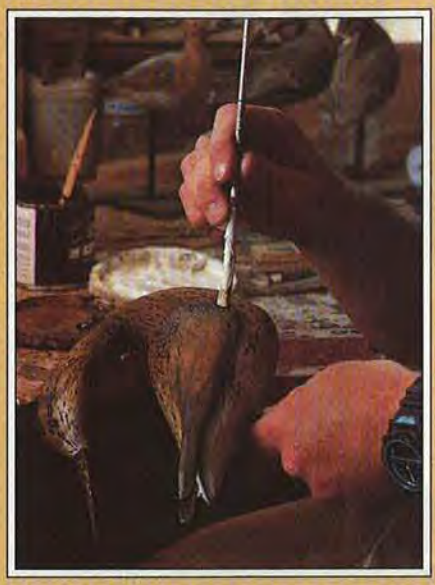
Painting with a stick also has the advantage of laying the paint on thickly, which gives the shorebird's body texture that you can feel. But, if it weren't for the burning—which Bob does after adding each color—the paint would tend to dry very slowly. With the stick-and-burn method that Bob has discovered, he can paint a medium-sized bird, such as the dowitcher, in about half an hour. Then he lets the paint dry for a couple of hours before the final cleanup.

"To bring out the different colors and remove any soot, I wash my birds in the kitchen sink with Dawn dish soap," he says, amused. "Next, I take a beat-up old scrub brush, the kind for cleaning up dirty floors, and give the decoys a good rubdown. That takes a little of the paint off, just like it's been out in the weather for a long time getting all beat up." And, if over the years, one of Bob's shorebirds should shed more paint, he'll gladly take it back for a flaming refinishing. Satisfaction guaranteed!

Written by Peter J. Stephano
Photographs: Steve Uzzell

Sanderlings, with their muted colors and soft lines, are among Bob's best sellers —at $65 apiece. Their finish appears to have stood the test of time.





After painting on the undercoat with a brush, Bob turns to sticks of different shapes to apply suggestive feather patterns on the decoy body.

Want to share in the Swain style?

Turn to *page 42* to learn how to carve and finish a dowitcher decoy designed by Bob Swain. For more information on Bob's shorebirds, write with an SASE to Swain's Shorebirds. P.O. Box 1631, Parksley, VA 23421.

Shorebird hunters always set out groups of decoys, called stools, to attract live birds. These graceful yellowlegs cost $90 each.

WET-WHEEL GRINDERS

Print this article

GIVE YOUR TOOLS THE EDGE THEY DESERVE

Choosing between a vertical or horizontal wheel

With water-cooled grinders you have a choice of vertical or horizontal wheels. The 220-grit aluminum-oxide vertical wheels rotate at about 90 rpm and remove material faster than the horizontal wheels. These vertical wheels also grind a concave bevel, as shown in the *Hollow Grind* drawing. This concave shape makes the final honing on a bench stone easier because you hone only the front and rear edges of the bevel, as shown in *Honing a Hollow Grind.*

Compared with the vertical wheels, horizontal wheels turn faster, around 500 rpm, but their finer-grit stones

Sharpening a tool on a high-speed bench grinder is like performing brain surgery in the back of a fast-moving pickup truck—theoretically possible, but difficult to do well. One small slip and you'll gouge the tool's cutting edge, or overheat the metal and destroy the temper of the steel.

Fortunately, you now have the option of keeping cutting edges sharp with the introduction of slow-speed water-cooled grinding machines. Compared to conventional bench grinders running at 3,450 rpm, these machines operate at anywhere from 60 to 500 rpm. This reduced speed gives you terrific control by slowly and evenly grinding away small amounts of metal. Plus, the grinding wheels receive a trickle of water from a reservoir, or rotate in a water trough, so that cutting edges never overheat.

The primary use for slow-speed wet-wheel grinders is to sharpen hand tools—chisels, plane irons, knives, spokeshaves, axes, and turning tools. But some of these machines will sharpen planer and jointer knives as well.

Not surprisingly, the cost of this high-quality sharpening doesn't come cheap: the least-expensive model in our tests costs about $100, and one tops out at $500. But in return, you'll never have to wait for your tools to come back from the sharpening service, you'll never ruin a tool on a high-speed machine, and you'll never again have to struggle in trying to make a clean, accurate cut with a dull hand tool.

Safety also ranks high as a reason to use wet-wheel grinders. A grinding wheel spinning at 60 or 500 rpm is much less likely to jerk a tool out of your hands and cause serious injury than a wheel roaring along at 3,450 rpm. And a sharper tool is always safer to use than a dull one.

To help you get a handle on the new world of slow-speed sharpening, we rounded up 12 of these machines and tried them out. Here's what we found.

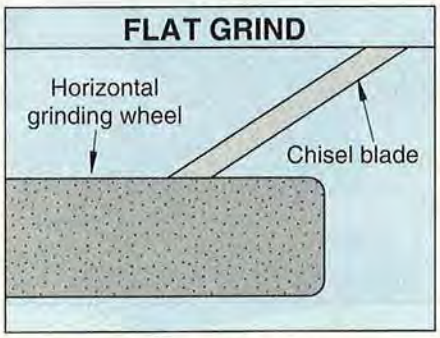
Choosing between one- and two-wheel machines

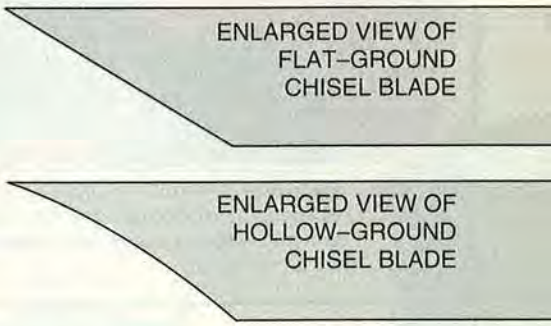
Many of these grinders, both vertical- and horizontal-wheel, offer a smaller secondary wheel running off the same motor, but spinning without water at 3,450 rpm. Like conventional bench grinders, these wheels hog off a lot of metal in a hurry. This second wheel increases the versatility of the machine and in many cases eliminates the need to own a conventional, high-speed grinder.

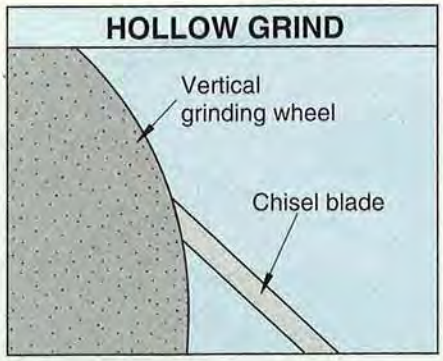
To help you with your selection, we put the machines into three categories: one-wheel horizontal grinders, two-wheel horizontal grinders, and two-wheel vertical grinders. We'll talk separately about the Tormek since its design differs significantly from any of the other models we tested.

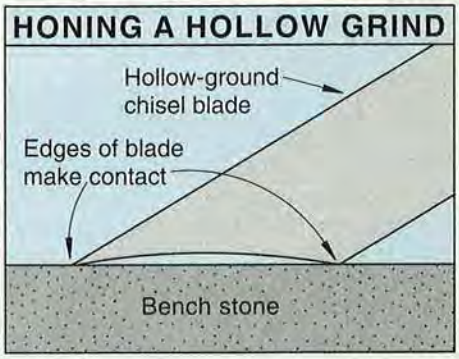
give you a polished edge. Made from the same material as Japanese waterstones, the horizontal wheels measure about 1×8" and come in grits from 800 to 1,000. The flat bevel produced by a horizontal wheel requires more work to hone—you remove metal across the entire width of the bevel.

Perhaps the biggest advantage of the horizontal wheels is that you can sharpen jointer and planer knives with many of them. None of the vertical-wheel models (except for the Tormek) offers this feature. Aside from these differences, the choice between a flat or hollow bevel is mostly a matter of personal preference. Hollow grinds work well on most tools, but many carvers prefer a flat bevel on their knives.









Continued

WET-WHEEL GRINDERS

A fine grind: single-wheel horizontal models

These machines spin at the same speed, about 500 rpm, and use the same type of fine-grit wheels as the two-wheel horizontal grinders. They cost more than their two-wheel cousins *(opposite page)*, but they vibrate a bit less since they're not paired up with the faster wheel.

Except for the Makita, these grinders come with a stamped-steel tool rest. Makita includes as standard equipment a sturdy, two-piece cast-iron planer/jointer knife jig, as shown *below*. This jig allows you to sharpen jointer and planer knives up to 15¾" long. And the base of the jig works well on its own to steady chisels, plane irons, and turning tools. You can buy similar cast-iron planer/jointer knife jigs for the Matsunaga and the Woodcraft models, but these jigs cost about $140.

Makita's sturdy cast-iron planer/jointer knife jig allows you to sharpen these tool edges with precision.

RAKUDA

MAKITA

MATSUNAGA

WOODCRAFT

The stamped-steel tool rest on many of the horizontal-wheel grinders, works well for freehand grinding, but it may bend if you bear down too hard.

The versatile choice: two-wheel horizontal grinders

All of these machines look and operate about the same, with one exception. The Woodtek model offers a 2"-wide (rather than the ½" standard) dry grinding wheel. This wide wheel, shown in the photo at *right* enables you to rough-grind big chisels and plane irons without the tool tipping off the side of the wheel.

The water for these machines drips onto the wet wheel from a reservoir above it. At 500 rpm, water occasionally gets flung beyond the foam splash guards. And compared to vertical wet wheels, which take just seconds to become saturated and ready for use, the horizontal wheels take several minutes.

We found that the tool rests on these machines will flex under pressure. This is not a major drawback, however. It only means you'll have to use a lighter touch and take your time when removing a lot of metal.

Another problem we discovered with the AMT and Reliant models is an uneven base—the feet didn't all make contact on a flat benchtop. This tended to magnify the vibration and required the use of shims under the feet to keep the machines steady.

The extra-wide dry wheel on the Woodtek machine comes in handy for removing big nicks and gouges on plane irons and chisels.

RELIANT MODEL DD68

AMT

WOODTEK

Continued

WET-WHEEL GRINDERS

Slow and steady: two-wheel vertical grinders

The 10" aluminum-oxide wheels on these machines rotate at 60–90 rpm giving you excellent control over the tool. And the 220-grit wheels make these user-friendly grinders more aggressive at removing material than the horizontal-wheel models. Most of these machines are nearly identical, and the only drawbacks we found were the tool rests. They don't give you any way to firmly clamp the tool in a fixed position.

Fortunately, we found a solution: the Accu-Sharp Grinding Jig, shown *below left*. The top part of the jig is all you need for the Delta since it has a more-substantial tool rest that includes a cast-iron table with a miter-gauge groove. For the other grinders, you'll need the auxiliary table too. Note, however, that the Penn State grinder includes the jig and table as standard equipment. The jig and table cost $44.95 ppd., and the jig without the table costs $34.95 ppd. from Parkwood Products Co., P.O. Box 87, Montvale, NJ 07645.

The Accu-Sharp jig and auxiliary table attach to the factory-made tool rest. It clamps your tool in a fixed position so that you can slide it across the wheel and grind a consistent bevel angle.

GRIZZLY

RELIANT MODEL NN355

PENN STATE

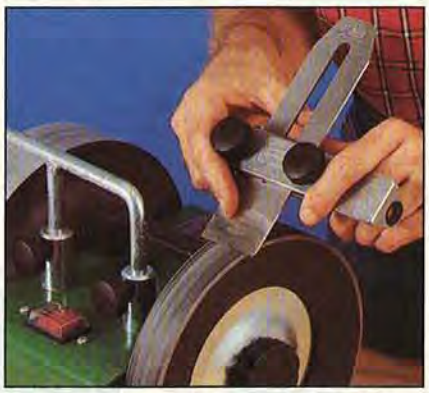
DELTA

A different breed: the Tormek

With a 10" vertical wheel paired to a leather stropping wheel, the Tormek Supergrind 2004 provides for all your grinding needs—from fast material removal to final honing. And while most other grinders suffer from inadequate tool support, the Tormek system is built around a simple, but versatile and effective tool rest.

TORMEK

The tool rest consists of a support arm shaped like a sideways "F." The two short prongs slide up and down in collars on the machine, and the various jigs ride along the horizontal axis of the support arm. As shown in the photo *right*, you can remove the tool and jig together from the support arm, check the progress of your grind (or strop off a burr), and then return the jig and tool to the support arm without having to recalibrate the grinding angle.



The basic machine comes with only one jig (for plane irons and chisels), but the company offers additional jigs for holding planer and jointer knives, gouges, axes, knives, and scissors. All the jigs worked well, except the scissor jig which is designed for

COMPARING SLOW-SPEED GRINDERS

MANUFACTURER/ IMPORTER	MODEL NUMBER	TYPE (1)	SPECIFICATIONS							PERFORMANCE (3)						COUNTRY OF ORIGIN (5)	WEIGHT (POUNDS)	LIST PRICE	SELLING PRICE (6)	OPTIONAL ACCESSORIES (7)	COMMENTS	SUPPLIER PHONE NO.
			AMPS	WET WHEEL DIAMETER (INCHES)	AUXILLARY WHEEL DIAMETER (INCHES)	WET WHEEL SPEED (RPM)	WET WHEEL GRIT	WET WHEEL COMPOSITION (2)	TOOL REST	VIBRATION	MATERIAL REMOVAL RATE	MANUALS	OVERALL RATING (4)	WARRANTY (MONTHS)								
AMT	4881	TWH	2	8	6	400	800	WS	F	F	G	F	7	*	T	24	$159	$98	---	A good price, but an uneven base and runnout in the horizontal wheel caused more vibration than in similar models.	610/948-0400
DELTA	23-700	TWV	2	10	5	70	220	AO	G	G	G	G	8	24	T	33	225	180	---	The most expensive in this category, but the machine showed minimal vibration and came with a better-than-usual tool rest.	800/438-2486
GRIZZLY	G1036	TWV	4.2	10	4.5	70	220	AO	P	G	G	G	8	12	T	33	100	100	---	Low-cost unit delivers good results. Needs an aftermarket tool rest.	800/541-5537
MAKITA	9820-2	SWH	1.1	8	---	560	1,000	WS	E	G	G	E	9	12	J	24	410	220	CW, FW	Our favorite single-wheel horizontal grinder. The jointer/planer knife-jig as standard equipment makes this a good value.	714/522-8088
MATSUNAGA	07W61	SWH	1.75	8	---	500	1,000	WS	P	G	G	---	8	12	J	14	300	300	CW, FW, KJ	Somewhat expensive, bit it's easy to use. Good performance and minimum vibration.	Garrett Wade 800/221-2942
PENN STATE	SSG	TWV	4.2	10	5	60	220	AO	E	G	G	G	9	12	T	35	170	170	---	Good value and performance. Includes Accu-Sharp jig as standard equipment.	800/337-7297
RAKUDA	RS-205A	SWH	1.9	8	---	500	1,000	WS	P	F	G	---	7	12	J	24	535	535	CW, FW	Expensive. Heavier than other horizontal -wheel grinders, but not any smoother.	Garrett Wade 800/221-2942
RELIANT	DD68	TWH	2	8	6	400	1,000	WS	F	F	G	F	7	12	T	33	120	120	---	Uneven base causes vibration. Comes with a coarse dry wheel for rough grinding.	Trend-Lines 800/767-9999
	NN355	TWV	4.2	10	5.5	70	220	AO	P	G	G	G	8	12	T	33	109	109	---	Good performance for the money. Tool rest needs aftermarket jig.	
TORMEK USA	SUPERGRIND 2004	V/S	2	10	---	90	**220/ 1,000	AO	E	E	E	E	10	12	S	33	369	369	**	Our favorite -- expensive, but worth it. Does everything from fast material removal to final polishing. Numerous jigs.	800/586-7635
WOODCRAFT	07W61	SWH	1.75	8	---	500	1,000	WS	P	G	G	P	8	3	J	14	269	269	CW, FW, KJ	Good performance and minimum vibration. Numerous aftermarket jigs and accessories.	800/225-1153
WOODTEK	878-463	TWH	2	8	5	400	800	WS	F	G	G	F	8	12	T	24	140	140	---	Our favorite of the two-wheel horizontal grinders. Minimum vibration and a 2"-wide dry wheel.	Woodworker's Supply 800/645-9292

NOTES:

1. (SWH) Single-wheel horizontal
   (TWH) Two-wheel horizontal
   (TWV) Two-wheel vertical
   (V/S) Vertical wheel with leather stropping wheel
2. (AO) Aluminum oxide
   (WS) Japanese-style waterstone
3. E Excellent, F Fair, G Good, P Poor
4. Scale of 1 - 10 with 10 being the highest score.
5. (J) Japan
   (S) Sweden
   (T) Taiwan
6. Does not include shipping.
7. (CW) Coarse-grit wheel
   (FW) Fine-grit wheel
   (KJ) Planer/jointer knife-grinding jig

* 10 year warranty on parts, 1 year on motor
** See text
--- Not applicable

European-style scissors that have a different bevel angle than those made for the U.S. market. Other standard equipment includes a tube of stropping compound, an angle-setting device, and an excellent 64-page instruction manual.

One accessory we recommend is the stone grader (about $20). With it you can change the surface of the wet wheel from 220 grit to 1,000 grit just by holding either the rough or smooth side of the grader down on the moving wheel for a few seconds. With the wheel smoothed to 1,000 grit, you can polish cutting edges to a mirror-like finish and flatten the backs of chisels and plane irons by grinding them on the side of the wheel.

Our recommendations

We chose the Tormek as the sharpening machine we'd most like to see in our shop. It provides superior results faster and easier than any other machine in the test. And the leather stropping wheel put such a fine edge on our tools that they needed no further honing on bench stones.

Of the one-wheel horizontal-grinders, we liked the Makita best. It ran the smoothest of all the models in this category. Plus it's the only machine in this group that includes the cast-iron jointer/planer knife-grinding jig as a standard feature. Since this jig can cost up to $140 as an aftermarket item, we consider the Makita—at $220—a good value for the money.

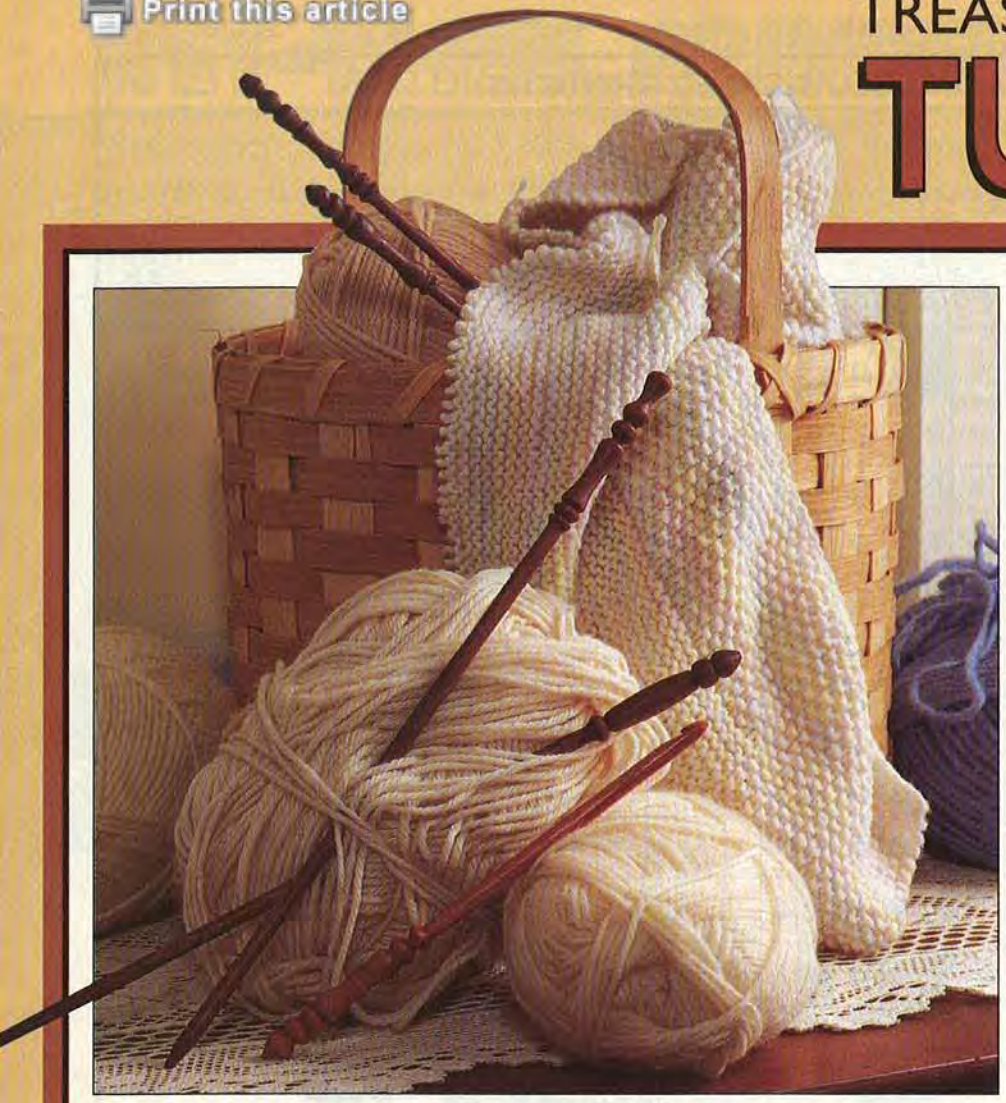
We also think that any of the two-wheel vertical grinders will serve you well—after you install the Accu-Sharp Grinding jig. Grizzly currently offers the best price in this category.

In the category of two-wheel horizontal grinders, we recommend the Woodtek. It vibrated the least of all grinders in this category, and the usefulness of the 2" high-speed wheel put this machine ahead of the pack.

Written by Tom Jackson
Technical Consultant: Matt Ver Steeg
Photographs: John Hetherington

Print this article

TREASURES FROM ONE TURNED



If you're looking for a lathe-turning challenge, try some knitting needles. Such slender turnings can tax your skills, but we'll show you a couple of jigs that will make this project a pleasure.

Project prep

Stock:
¾×¾×15" hardwood.

Lathe equipment:
Steady rest,
spur drive center
or 3" faceplate,
revolving tail center.

Turning tools:
¾" roughing or spindle gouge,
¼" spindle gouge,
1" and ½" skew,
3⁄16" parting tool.

Lathe speeds:
roughing, 800–1,000 rpm;
turning and sanding
1,200–1,500 rpm.

Install a steady rest on your lathe. If you don't have one, now is the time to build one. You just can't successfully turn a knitting needle or any other long, slender object without one. You'll find simple instructions for building a steady rest on *page 76.*

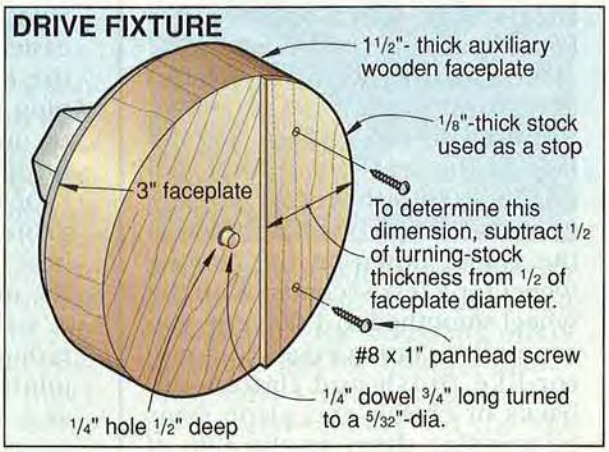
Create some friction

For slender turnings like these, friction drive provides a real advantage—lapses in technique do less damage. If you catch a tool, the turning simply stops going around.

To set up a friction drive, fit the lathe tailstock with a revolving center. On the headstock, install a dead cup center (the type often provided as a tail center with a lathe). Or, make the simple fixture shown in the Drive Fixture drawing.

To construct the drive, attach a 1½"-thick scrapwood auxiliary faceplate to your 3" faceplate. True the edge and face, and bore a ¼" hole ½" deep at the center. Glue a ¾" length of ¼" dowel into the hole. Turn the protruding end to 5⁄32" diameter.

A drive dog (the partial circle shown on front of the fixture) provides a positive drive when pure friction isn't enough, as is sometimes the case when rounding down square stock. To make one, first, draw a circle the diameter of your auxiliary faceplate on a piece of ⅛"-thick plywood. Divide the thickness of your turning stock by two, then make a mark that distance above the circle center. (With ¾" stock, for instance, the distance would be ⅜".) Draw a line across the circle through that mark. Cut out the circle, then cut along that line. Use the smaller segment as your dog. Drill a 5⁄32" hole near each corner of the part.


DRIVE FIXTURE
1 1/2"- thick auxiliary wooden faceplate
1/8"-thick stock used as a stop
3" faceplate
To determine this dimension, subtract 1/2 of turning-stock thickness from 1/2 of faceplate diameter.
#8 x 1" panhead screw
1/4" dowel 3/4" long turned to a 5/32"-dia.
1/4" hole 1/2" deep

TRADITONAL CRAFT TO ANOTHER
KNITTING NEEDLES

Mount the turning stock

For each knitting needle, cut a ¾×¾×15" piece of hardwood. (Walnut—shown in the photo—and cherry are good choices, as are many exotic woods.) Find and mark the center on each end.

Mount the stock between centers. If you use the friction-drive fixture, drill a 5/32" hole ¼" deep into the center on the driven end of the stock. Place the hole over the dowel. Attach the dog with screws, butting the straight edge against one side of the square stock for a positive drive. Move the steady rest's support arm out of the way.

Round the stock down to ½" diameter with the roughing gouge or large spindle gouge. As you approach the smaller diameter, slide the arm of the steady rest over until the wheels contact the stock. Position the rest at about the middle of the workpiece. Afterward, remove the dog from the friction-drive fixture.

Next, make it smaller

About 5" from the headstock end, mark a line around the workpiece. Leaving a waste piece about ¾" long at each end, turn the stock to 5/16" diameter between the line and the tailstock and 7/16" between the line and the headstock. Turn down to these diameters progressively; that is, take a little off one section, then the other. Take light cuts, too. (We used the skews here, and for the remainder of the project.)

Adjust the steady rest frequently as you work, bringing the wheels to bear firmly against the workpiece. Applying enough force to prevent the thin turning from whipping may actually push the workpiece slightly out of line toward the front of the lathe.

For additional support, wrap your hand around the turning as you take a light cut with the skew. (The steady rest has been removed for clarity.)

That's fine; the pressure of the tool on the front of the workpiece will push it back into line. Just don't push it too far out of line.

The job will go more smoothly with a bit of hand-holding, too. As you work, cup your left hand behind the workpiece with your thumb on the tool blade as shown *above*. As the tool flexes the workpiece, apply hand pressure from behind to prevent whipping. The more you can keep the turning's centerline aligned along the lathe's axis, the better your turning will look.

Here comes the fun

Turn the needle shaft to its finished diameter. (See the chart *right* for sizes. We made needles in the three largest sizes.) Check the diameter often at several points to ensure a true shaft. Form the pointed end partially, but leave a small tenon to connect it to the waste at the tailstock. Keep the turning running true with the steady rest.

Lay out the the grip end, using one of the Full-Sized patterns on *page 74* or your own design. With the skew or a small gouge, form the features, supporting the turning with your hand. Turn the top to a small supporting tenon.

Sand the handle with 150-, 220- and 320-grit abrasives. Be careful not to obliterate the features with too much sanding. Turn off the lathe, and sand the needle itself with the grain. A sanding block helps keep the needle true.

Dismount the turning. Saw the waste from the grip end. Sand the end to remove the nib. Leave the waste attached to the needle end for the time being—it's convenient to hang onto while finishing the turning. Apply a clear finish. When dry, saw off the waste, and sand the end to a rounded point, not a sharp one. Finish the end, wax the needle, and buff.

Don't know a knitter?

For a variation, make a crochet hook. Turn it just like a knitting needle, except shorten the shaft to 5". Then, form the hook end by sawing a slot and filing a notch on each side where shown in the pattern illustration. Use a commercial crochet hook for a model.

Or, try this for a change. Sharpen the point slightly, and the knitting needle becomes a decorative skewer for food. Use it for cold hors d'oeuvres, though, rather than for cooking shish kebabs. Or, make two with blunt ends for a one-of-a-kind pair of chopsticks.

Knitting-needle diameters

size	mm	inch
00	2	5/64
0	2.25	3/32
1	2.75	7/64
2	3	1/8
3	3.25	1/8
4	3.75	9/64
5	4	5/32
6	4.5	11/64
7	5	13/64
8	5.5	7/32
9	6	15/64
10	6.5	1/4

Photographs: John Hetherington Illustrations: Kim Downing

SHORELINE

A HIGH-STYLE SHOREBIRD FOR YOU TO CARVE

As soon as we saw Virginian Bob Swain's shorebird sculptures (see the article beginning on *page 29*), we knew you'd want to try making one. Here's how Bob goes about carving and painting a dowitcher, a common wading bird related to the sandpiper.

Bandsaw the blanks

Trace the Body patterns (in the *WOOD PATTERNS*™ in the center of the magazine) to the stock, placing the side view on one face and the top view on the adjoining edge. Position the front of each pattern at one end of the stock. Trace the Head outline (side-view only) onto its stock and the Bill patterns onto scrapwood.

Bandsaw the top-view body outline, saving the waste pieces. Tape the waste pieces and the cutout back together, then bandsaw the side-view outline. Cut out the head and bill blanks.

Draw a centerline around the top and bottom of the body blank and on the head and neck blank. On one side of the body, draw the centerline for the hole drilled into the bottom of the body. (The stand fits into this hole.) Chuck a ¼" bit into your drill press, and align the hole centerline alongside the bit. Grip the body in this position with a handscrew clamp, then center it under the bit. Drill the hole 1¾" deep.

The head attaches to the body with a screw. Though we won't fasten on the head right now, this is a convenient time to drill the hole. Hold the blank in a handscrew clamp, with the mating surface of the neck flat against a piece of scrapwood on the drill-press table. Chuck a 5/32" bit in the drill press, and center it on the back of the neck about 1" from the bottom. Drill through the neck. Counterbore with an 11/32" bit to form a pocket about ⅛" deep for the screw head.

Give your bird wings

On the bird's back, draw the two *light gray* lines shown on the top-view. Note that they converge toward the tail.

Print this article

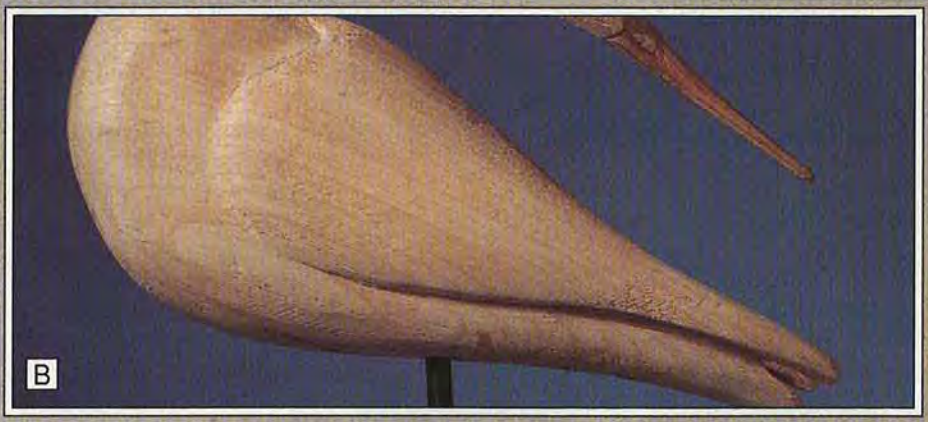
Between those lines, carve the bird's back straight down to the tail, shown in profile by the *dotted* line on the side-view pattern. Here's an easy way to do that. First, stop-cut the two lines with a backsaw. Start sawing at the tail end of the line, holding the saw blade parallel to the slope of the back. Cut down to the top of the bandsawed tail notch, but don't cut into the upper part of the bird's back. You'll only be removing the wood between the ends of the folded wings.

Once you've made your saw cuts, clear out the waste wood. Pare it away a little at a time with a chisel or gouge. Don't try to create a perfectly flat plane; maintain a slight side-to-side crown on the back between the wings, shown in Photo A, *right*.

Now, round over the bird's back and sides. The rasp, coarse rotary power-carving bits, gouges, or a knife would work. Follow the Section B–B profile and the finished widths shown on the pattern as guides. (Leave a little extra material—perhaps 1/16" or so—to allow for sanding.) Keep an eye on the centerline on the blank to maintain symmetry from side to side. Concentrate on the upper two-thirds of the body from the neck to the tail, for now.

After you've rough-shaped the body, draw a wing on each side, following the *light gray* line on the side-view pattern. Stop-cut the lines, then carve the lower part of the wings and body. Create a distinct separation between the lower edge of the wing and the body, shown in Photo B. The wings should appear almost as if they're separate parts, applied to the body. Round over the front edges as you shape the body. Bring the tail to a rounded point, as shown in the photos.

A


B

C

Project prep

Stock: Basswood, jelutong, white cedar, or other carving wood. Body, 4×3×10"; head, 2×3½×6"; bill, ¾×¾×4½".

Carving tools: This design accommodates many carving techniques. You could use most wood-shaping tools, such as knives, gouges, power-carving equipment, a rasp, or abrasives. Project designer Bob Swain often uses a second-cut (#49) cabinetmaker's rasp for shaping.

Buying Guide

Blanks and stand. Bandsawn body, head, and bill blanks, $29.95 per set ppd. in U.S. Add $5 for a steel stand as shown in the photo. (Stand available separately for $7.95 ppd.) Bob Swain, Box 1631, Parksley, VA 23421.

Now, carve the head

On the front of the head blank, mark the location for the slot to receive the bill's tab. Drill a series of adjoining 1/8" holes to rough in the slot. With a knife or gouge, clean out between the holes and square the corners.

Epoxy-glue the bill to the head, ensuring that it sticks out straight and level. The bottom of the bill should be parallel to the line of the bottom of the head, too.

Refer to Photo C, *above*, then shape the hollow areas shown on each side of the head. The round

Continued

DOWITCHER

side of a rasp or a shallow gouge will do the trick. Refer to the photographs and Head Section A-A on the pattern as you form the head. Round the front sides of the head and shape the bill.

Next, carve the eyes into the sides of the head. Draw a ¼"-diameter circle where shown on each side of the head. Refer to the Eye Detail drawing, then cut straight in 1/16" deep along the line. Angling the knife tip from the center of the eye toward the edge, carve the surrounding channel. Round over the eyeball. You also could drill a ¼" hole about 1/16" deep, and insert a 4mm glass eye into it. Now, attach the head to the body. Angle the head 10-15° to the left side of the body's centerline. Using the neck hole as a guide, drill a pilot hole into the body. Glue the head in place with epoxy, then drive in a #6x2½" drywall screw. After the glue cures, fill the screw hole with wood filler, and shape the neck. Blend the neck into the body and the bill into the head, filling the seams as necessary.

D

Paint makes it perfect

Sand the bird lightly before painting. Leave some rasp or abrasive scratches for texture, if you wish. Round any sharp edges for a soft, fluid look.

Bob paints his birds with sign-painting enamels, but you can use artist's oil paints or acrylics, available from art-supply dealers. For the dowitcher, Bob's color choices are flake white, Vandyke brown, burnt sienna, and raw sienna. Those colors are available in oils, similar ones in acrylics.

Bob achieves the aged effect on his carvings in part by painting right over the bare wood. He mixes and blends his paints right on the bird, too. The resulting variations in color and texture lend the well-worn look he seeks. Here's how Bob paints one.

With flake white, paint about 3" back on each side of the head, about the same distance up from the tail on the back, and on the underside from the tail to the stand hole. While the paint is still wet, add raw sienna and Vandyke brown, blending them into the white and covering the rest of the body and neck. Keep the color a little lighter on the bottom and onto the curve of the breast.

Shade in a triangle of raw sienna on the wings behind the neck. Bring an arc of raw sienna about halfway down in front of the wings, again blending the colors together so you can barely tell where one ends and another begins.

At the wing tips, mix Vandyke brown, raw sienna, and burnt sienna. Afterward, start at the tips and brush about halfway to the front with Vandyke brown.

From the bird's forehead, brush burnt sienna and Vandyke brown along the top of the head. Continue the color down to about the point where the body and neck join. Paint the bill and eyes Vandyke brown.

To paint the feather strokes, Bob employs some unusual implements. For the straight strokes, he uses a painting stick. To make one, cut a piece of scrapwood to 1/8x¼x3". Sand or hammer the edge flat, and sand it smooth. Then, dip the edge into Vandyke brown, pick up some color, and dab it onto the bird. Don't try to spread the paint or smooth it—the best strokes will look slightly raised, like the printing on some business cards.

Sandpaper and a pencil come into play for the curved feathers. Wrap a short strip of sandpaper into a U-shape around a pencil, as shown in Photo D, *above*. Secure the sandpaper with masking tape, then dip the sandpaper's edge into the paint. Again, blot the paint onto the surface, leaving a U-shaped line. Point the closed end toward the back of the bird.

Then, wrap a slightly longer piece of paper into a U with longer sides. Paint as before, placing these larger shapes closer to the dark wingtips. Sign your bird near the back on the bottom.

You've done a stand-up job

Finally, provide a stand for your shorebird. You can order a steel stand as shown in the photo (see the Buying Guide) or make a wooden one. For a wooden one, drill a ¼" hole 1" deep into the center of one side of a 2x5x5" piece of stock. Glue one end of an 8" length of ¼" dowel into it. Finish as desired, then place the the bird on the dowel.

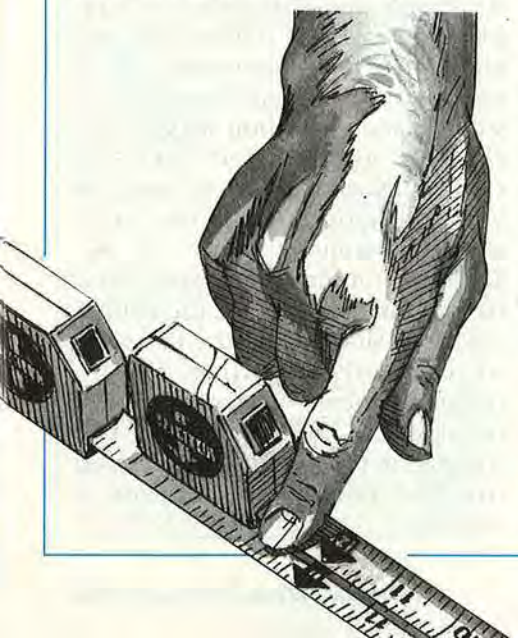
Project Design: © Robert Swain
Photographs: John Hetherington
Illustrations: Kim Downing, Roxanne Le Moine

MEASURING AND MARKING RULES TO LIVE BY

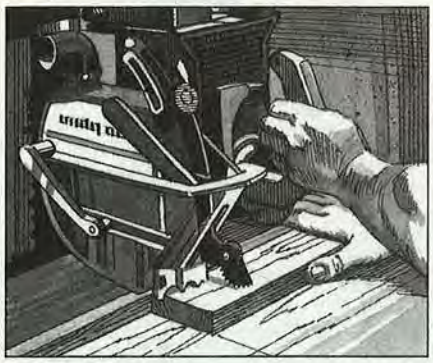
To avoid wasting wood and ensure quality results, every woodworker should develop good habits for measuring and marking cuts. Read the following five pointers to find out how well you "measure up" in this area.

1 For measurements under 1', we suggest that you use a rigid metal rule. Unlike a tape measure, a metal rule will lie flat on your workpiece, won't flex, and doesn't have a riveted end.

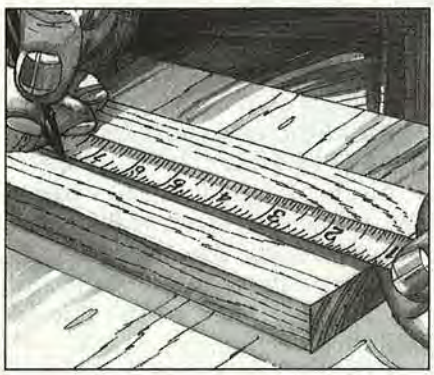
For measurements over 1', a trusty tape measure works fine. Just remember that two tape measures often will give you two different measurements. So, always use the same tape measure throughout the construction of a project. If you and someone else are working on the same project, both of you should use the same brand and length of tape measure. It's a good idea to double-check their accuracy by laying them side by side, as shown *below*, to make sure that they measure the same.



2 When cutting pieces to length, always square one end before you mark anything. Never mark both ends for length before cutting—you double your chance for error.



3 The riveted end on a tape measure can contribute to inaccuracy if its rivet holes become elongated over time. Unless you're certain that the end of your tape measure is dead-on, you should avoid using it. Instead, line up the 1" mark with the squared end of your workpiece, then subtract 1" from the reading on your tape when marking the other end of the cut.

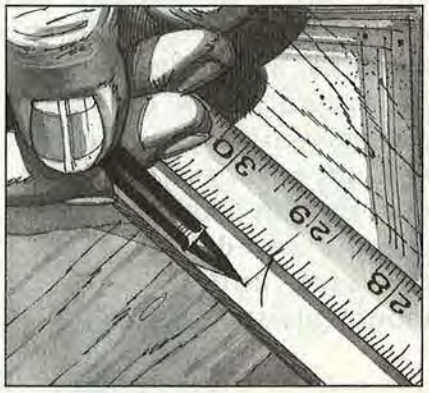


4 Try to get into the habit of using a mechanical pencil for marking tasks. Its fine lead gives you a narrow line that leaves little doubt where a cut should fall, mark after mark.

Such a pencil can be bothersome if you continually break the lead. To avoid this, hold the pencil at an angle rather than vertically.

5 Whenever possible, use a square to mark your pieces for length. This way, you will have a straight mark perpendicular to the edge that's easier to accurately split with your blade.

Before doing this, you need to accurately mark the location of the square's blade. Do this by making a V-shaped mark with its point at the exact measurement on the tape as shown *below*. You won't lose track of this mark if you glance away for any reason.



Imaginative furniture for creative kids

STELLAR TABLE

Make playing a game of checkers, coloring a picture, or assembling a puzzle more enjoyable for kids with their very own pint-sized table and chairs. In fact, we put the playtime pieces to the test with a few discriminating youngsters and they passed with flying colors. For accents, we painted our set with bright colors and added the star and moon cutouts.

Transfer the patterns and machine the chair sides

1 Cut the chair side pattern (A), backrest pattern (B), and stretchers pattern (C) to shape from the *WOOD PATTERNS*™ insert in the center of the magazine. Use spray adhesive to secure the patterns to ¾" birch plywood. With a bandsaw or a jigsaw fitted with a fine-tooth blade, cut the chair side (A) to shape, cutting just outside the marked lines. Sand to the line to finish the shaping.

2 Drill a blade-start hole, and cut the star to shape. Wrap sandpaper around a thin flat strip of wood, and sand smooth the edges of the star cutout.

3 Drill a 1/16" hole at each marked centerpoint.

4 Use this first chair side as a template to mark the outline and star shape on the remaining chair sides. Cut the remaining chair sides to shape, cutting slightly outside the marked line. (See the Cutting Diagram for best usage of your plywood.) Cut the star-shaped openings.

5 Using double-faced tape, stick the template to one of the rough-cut chair sides. Align the template on the traced outline on the rough-cut piece. The uncut areas outside the marked line on the rough-cut piece should protrude over both edges of the template.

Continued

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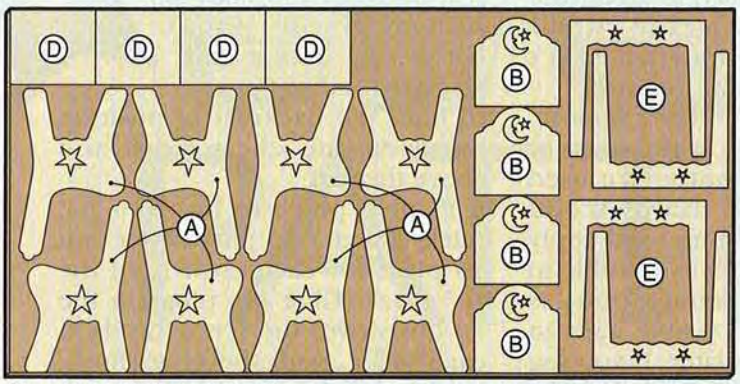
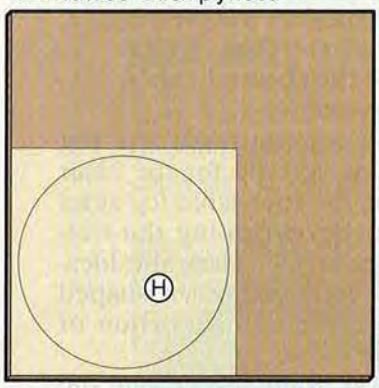
AND CHAIRS



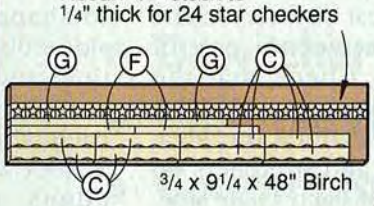
3/4 x 48 x 96" Birch plywood

Note: Cutting Diagram provides enough material for four chairs and one table.

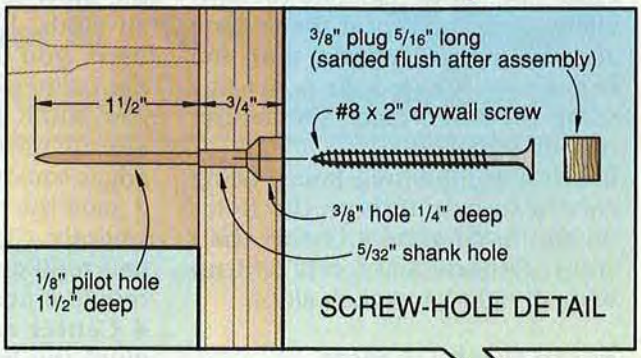


3/4 x 48 x 48" Birch plywood

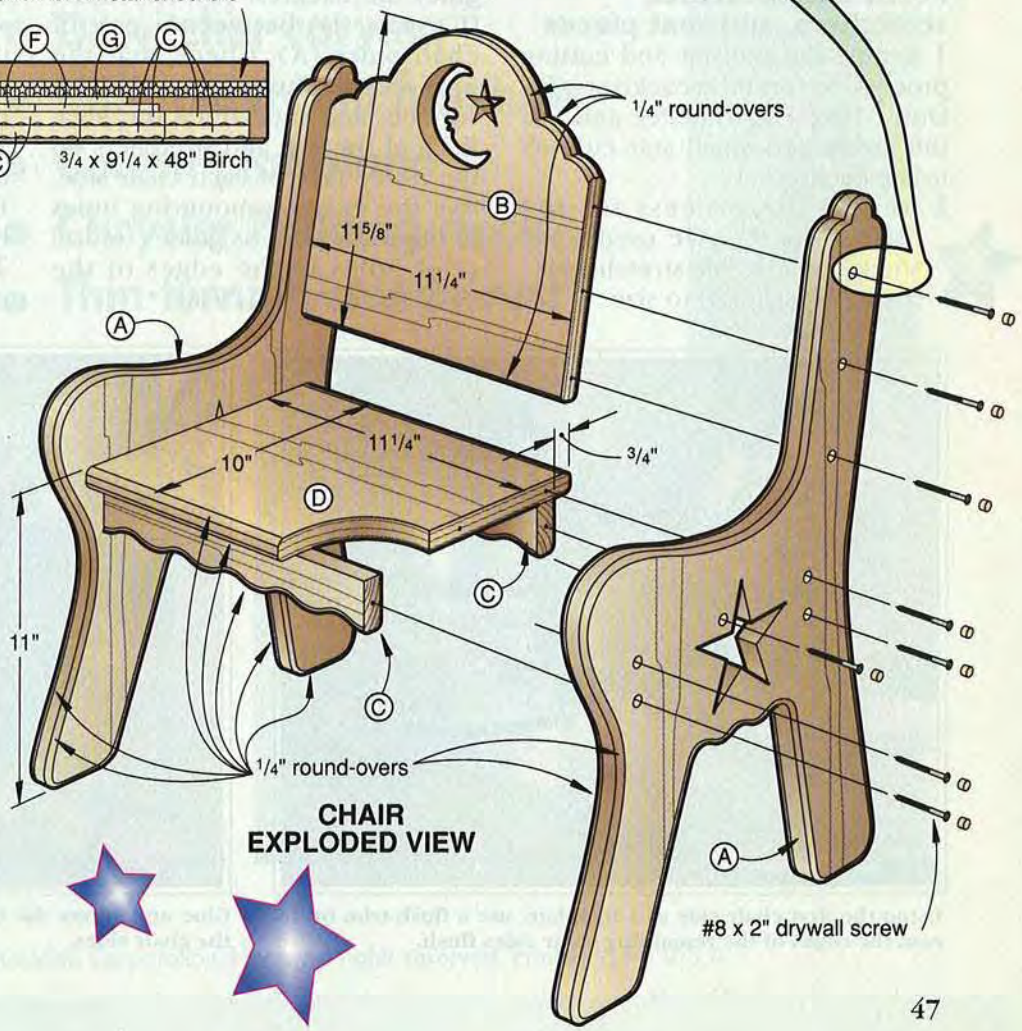
CUTTING DIAGRAM



3/4 x 9 1/4 x 48" Birch



SCREW-HOLE DETAIL



CHAIR EXPLODED VIEW

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
FOUR CHAIRS					
A sides	3/4"	14 3/8"	22 3/4"	BP	8
B backrests	3/4"	11 5/8"	11 1/4"	BP	4
C stretchers	3/4"	1 3/4"	11 1/4"	B	8
D seats	3/4"	10"	11 1/4"	BP	4
TABLE					
E legs	3/4"	18"	18"	BP	4
F cleats	3/4"	3/4"	16 1/2"	B	2
G cleats	3/4"	3/4"	15"	B	2
H tabletop	3/4"	28" dia.		BP	1

Materials Key: BP–birch plywood, B–birch

Supplies: #8x1 1/4" drywall screws, #8x2" drywall screws, #4 finish nails, wood filler, latex primer and paints, water-based polyurethane.

6 Fit your router with a ¼" flush-trim bit. With the template on the bottom, lower the bit so that the pilot rides on the template. Rout the rough-cut chair side outline (but not the star) to shape as shown in the photo *below*.

7 To transfer the hole center-points, drill through the previously drilled 1/16" holes in the first chair side and through the second chair side. Now, separate the two chair sides, and repeat the routing and drilling procedures with the remaining chair sides, always using the same chair side as the routing template.

8 Drill the mounting holes, being careful to counterbore the holes on the *outside face* of the chair sides. Otherwise, you'll end up with all right-hand chair sides.

Form the backrests, stretchers, and seat pieces

1 Repeat the transfer and cutting process to form the backrests (B). Don't forget to transfer and cut the moon and small star cutouts to the backrest.

2 Repeat the process for the stretchers (C). We used solid-stock birch for the stretchers.

3 Cut the seat (D) to size.

Rout the edges and assemble the pieces

1 Rout ¼" round-overs along the edges noted on the Chair Exploded View drawing. Don't rout the edges of the cutouts.

2 Sand the routed edges smooth. Next, fill any voids in the edges of the pieces with putty (we used Durham's Rock Hard Wood Putty). Take your time, and apply the putty as smooth as possible to all voids. If not enough putty is used, you'll have visible gaps in the painted edges later. If you use too much putty, you'll have to spend more time sanding the edges smooth.

3 Sand the routed and filled edges smooth. Check the edges closely and refill any remaining gaps and resand if necessary.

4 Center and lightly clamp (no glue) the backrest (B), stretchers (C), seat (D) between a pair of chair sides (A). Check that the four feet sit flush on a flat work surface, and then trace the locations of the seat and stretchers on the inside face of each chair side. Use the existing mounting holes in the chair sides as guides to drill pilot holes in the edges of the backrest, seat, and cleats.

5 Glue and screw the backrest, stretchers, and seat between the sides. As shown in the photo *below*, we used a pair of L-shaped supports to hold the backrest in position between the chair sides and above the seat.

6 Plane a piece of birch to 5/16" thick. Using a 3/8" plug cutter, cut 16 plugs for each chair from the 5/16" stock. Glue the plugs in the 3/8" holes over the screw heads in each chair. Sand the plugs flush, being careful not to sand through the thin veneer of the plywood.

The checkerboard table comes next

1 Make a template for the leg sides (E) as you did for the chair sides. Cut the four table leg sides to shape, bevel-ripping the outside edges at 45°. Mark the locations and cut a pair of star-shaped cutouts in the apron portion of each table leg side.

2 Rout a ¼" round-over along the edges noted on the Table Exploded View drawing. Don't rout the beveled edges of the legs.

3 Glue and clamp the legs together, checking for square. (We used

Using the first chair side as a template, use a flush-trim bit to rout the edges of the remaining chair sides flush.

Glue and screw the backrest, stretchers, and seat between the chair sides.

a band clamp around the top of the legs, and drove #4 finish nails through the mating beveled joints to hold the joints tight while the glue dried.) Later, set the nails and sand a ⅛" round-over along the corners of the leg assembly. See the Table Exploded View for reference. Fill the holes.

4 Cut the cleats (F, G) to size. Drill the countersunk screw holes through the cleats now. It's easier than trying to drill the holes after they're in place. Glue and screw the cleats flush with the top edge of the leg assembly.

5 Cut the tabletop (H) to 28" in diameter where shown on the Tabletop drawing. (We used trammel points to mark the 14"-radius circle.) Sand the cut edge smooth.

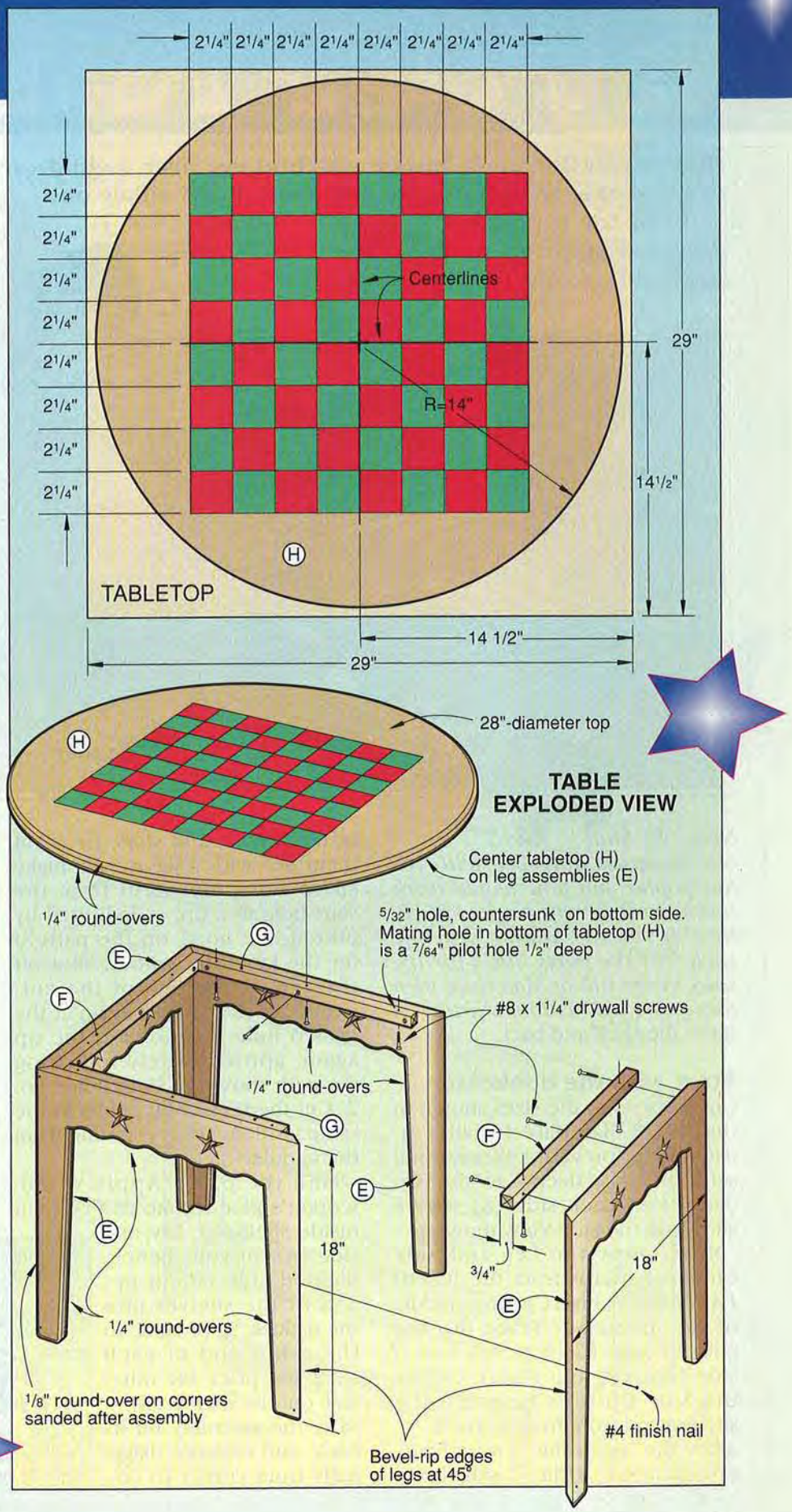
6 Rout ¼" round-overs along the top and bottom edge of the tabletop, fill any voids, and sand the filled areas smooth.

7 To make the checkerboard playing pieces, transfer the star pattern 24 times to ¼"-thick birch stock. Next, cut and sand the 24 stars to shape.

8 Paint the table and chairs by brushing on a coat of latex primer (we used a foam brush). Paint the entire tabletop. Next, lightly pencil the large square on the top surface of the tabletop and paint it. Then, mark the checkerboard squares on the large square as dimensioned on the Tabletop drawing. Paint the individual squares. Paint twelve of the checkerboard playing pieces (stars) one color and the other twelve stars another color. For additional protection, add a coat of water-based polyurethane to all surfaces of the chairs and table.

9 Working from the bottom of the table, screw through the cleats to secure the tabletop to the leg assembly cleats (F, G).

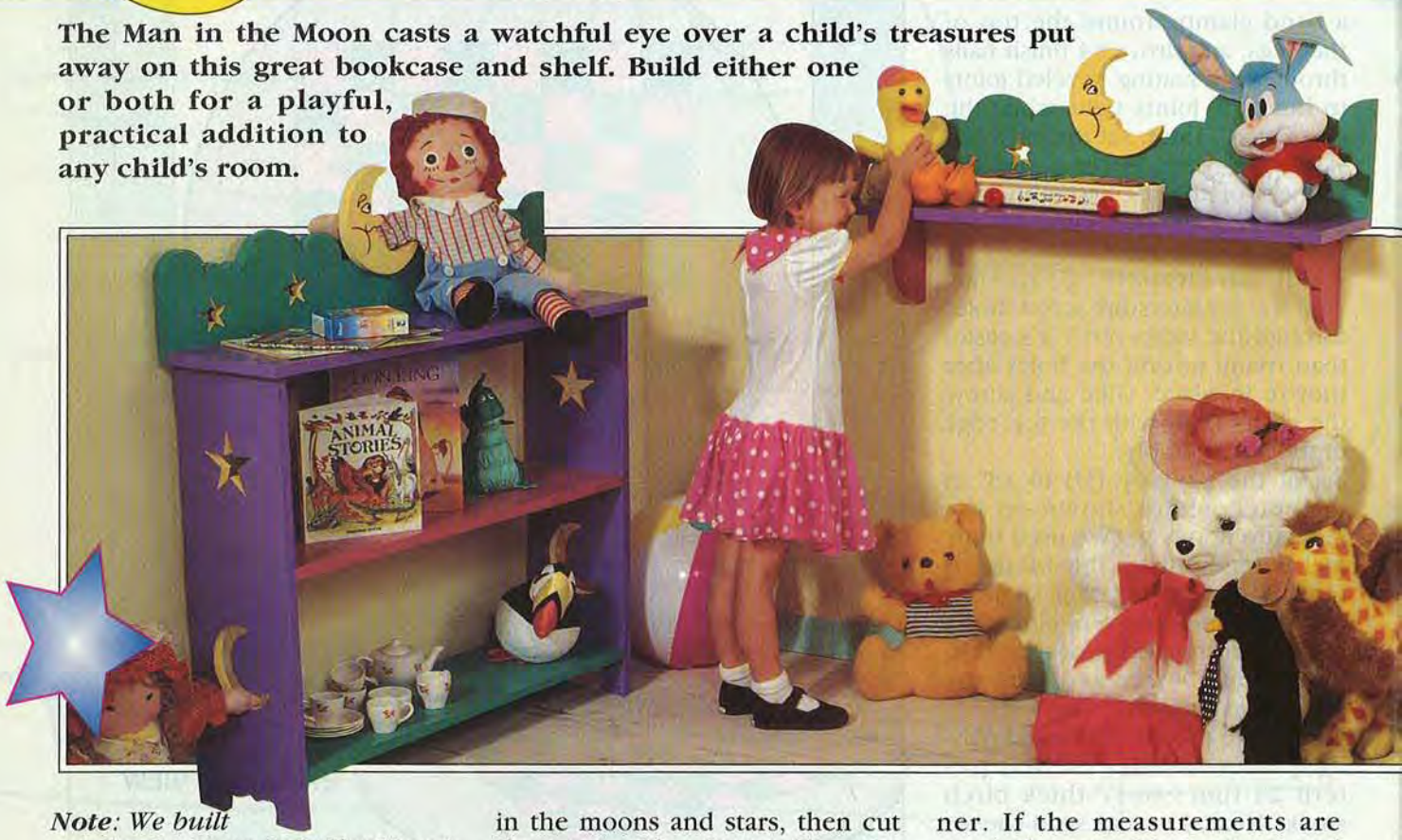
Written by Marlen Kemmet
Project Design: Christine Anderson
Illustrations: Kim Downing
Photographs: John Hetherington



PLAYFUL STORAGE FOR A CHILD'S TREASURES

FANCIFUL

The Man in the Moon casts a watchful eye over a child's treasures put away on this great bookcase and shelf. Build either one or both for a playful, practical addition to any child's room.



***Note**: We built our bookcase and shelf with yellow poplar, but pine would work just as well for this painted furniture. If you're building only the shelf, cut the parts listed for the shelf in the Bill of Materials, then follow the instructions starting at* Build the shelf and back.

Start with the bookcase

Cut all parts to the sizes shown in the Bill of Materials. Install a ¾" dado cutter on your tablesaw, and set it to cut ⅜" deep. Saw the two dadoes on each side (A) where shown in the Side View drawing.

Next, copy the Leg and Side Cutouts patterns from the *WOOD PATTERNS*™ insert in the middle of the magazine. Trace the Leg pattern onto the bottom of each side (nearest to a dado). Center the Side Cutouts between the shelves and from front to back.

Saw the leg profile with a bandsaw or jigsaw. Drill ¼" start holes in the moons and stars, then cut them out with a jigsaw. To make sharp star points, cut from the start hole to a tip, as indicated by dotted line no. 1 on the pattern for the large star cutout. Shut off the saw at the end of the cut, withdraw it, and start again at the drilled hole. Cut toward the tip again, approximately following the path shown by dotted line no. 2. Cut the remaining points in the same fashion, always starting from the middle.

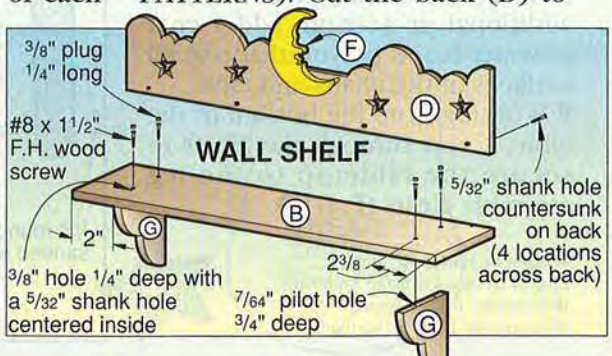
Sand the parts. Apply woodworker's glue to one end of each inside shelf (C). Lay one side (A) on your bench, dadoed side facing up, and fit the shelves into the dadoes. Apply glue to the other end of each shelf and place the other side on the shelf ends.

Lay the assembly on its back, and measure diagonally from corner to corner. If the measurements are equal, the assembly is square and ready to clamp. If not, adjust as needed. Clamp the assembly and check for squareness again.

Position the lower spreader (E) where shown. Glue it in position, and fasten it with 4d finishing nails. Set the bookcase aside.

Build the shelf and back

The wall shelf and the top of the bookcase are almost identical. To build either, first copy the Back pattern sections (in the *WOOD PATTERNS*). Cut the back (D) to



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size, then adhere the patterns to it. Align the pattern ends with the ends of the stock, and lay the bottoms along one edge of the board.

With a bandsaw or jigsaw, saw the cloud profile along the top edge. Then, with a jigsaw, cut out the stars as described in the bookcase instructions.

Now, cut out the Man-in-the-Moon ornament. Trace the Moon pattern (in the *WOOD PATTERNS*) onto part F, then cut it out with a bandsaw or scrollsaw. A ⅛" bandsaw blade will come in handy for cutting the moon's facial features. For scrollsawing, use a heavy blade, such as a #9 (.053"×.019" with 12 teeth per inch).

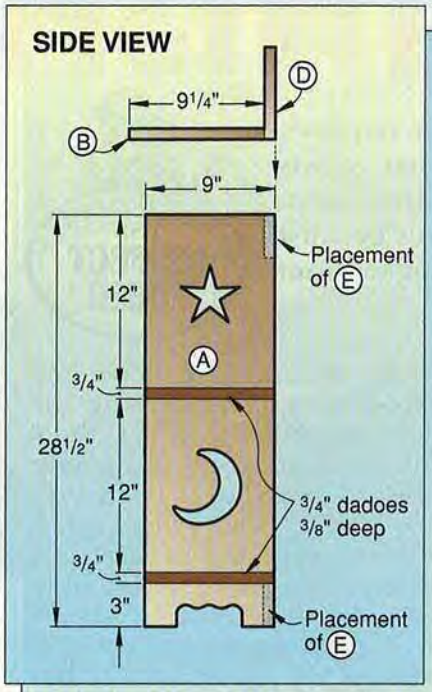
Drill and countersink screw holes in part D where shown. Then, screw and glue the back (D) to the back edge of part B. Match the ends, and place the bottom edge of part D flush with the bottom surface of part B. Glue the moon to the front of part D.

Drill the counterbored screw holes through part B where shown. Notice that hole placement differs between the wall shelf and the bookcase top.

To complete the bookcase, screw the shelf-and-back assembly to the top of the sides. Glue the top spreader (E) into position, and nail. For the wall shelf, attach the brackets to the bottom of the wall shelf with screws and glue.

Finish with bright paint

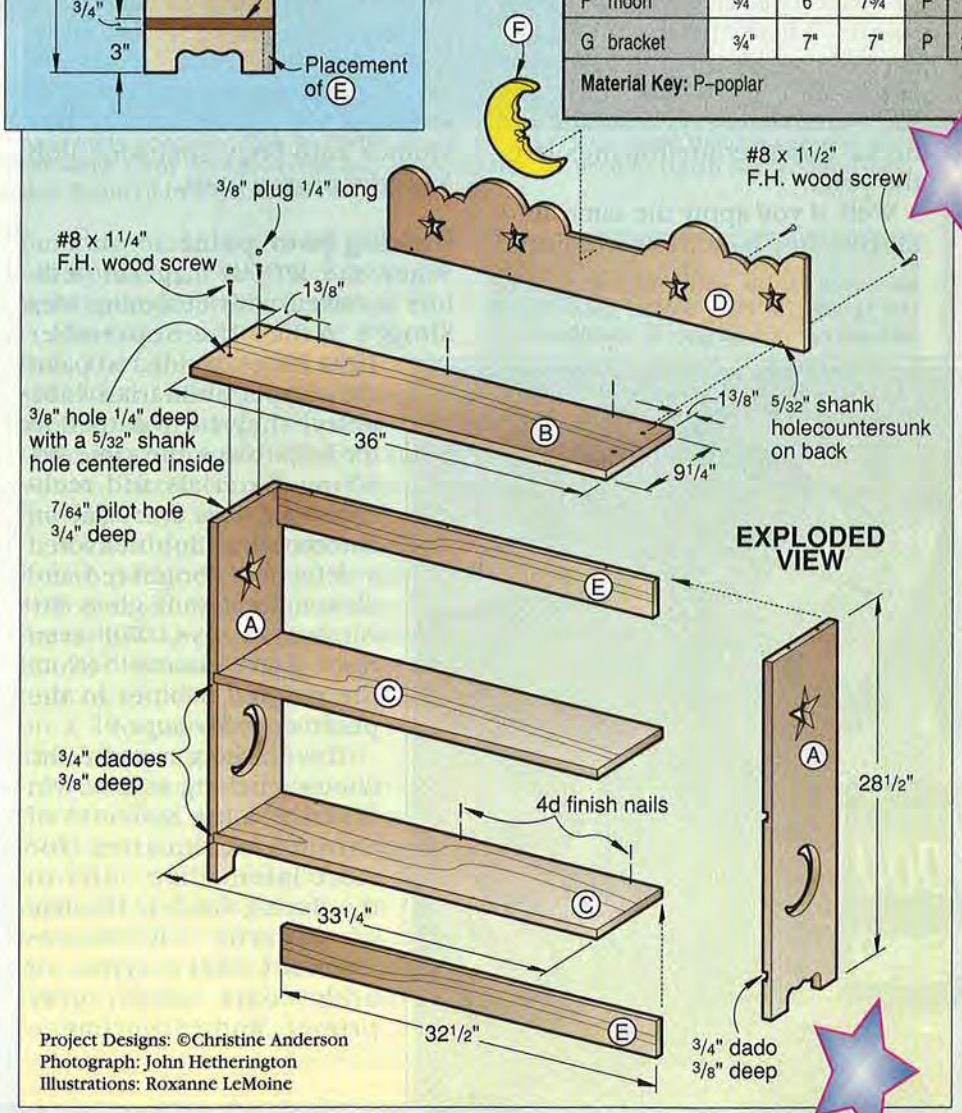
Plug the screw holes. Set the nails below the surface, and fill the holes with putty. Then, finish-sand the completed shelf and bookcase. Prime with white interior primer, then paint. Artist and designer Christine Anderson of West Des Moines, Iowa, painted the pieces shown with latex enamel in bright colors. To accent the side and back cutouts, paint their inside edges where shown in the photographs.



Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
BOOKCASE					
A side	¾"	9"	28½"	P	2
B shelf	¾"	9¼"	36"	P	1
C inside shelf	¾"	9"	33¼"	P	2
D back	¾"	8"	36"	P	1
E spreader	¾"	3"	32½"	P	2
F moon	¾"	6"	7¾"	P	1
WALL SHELF					
B shelf	¾"	9¼"	36"	P	1
D back	¾"	8"	36"	P	1
F moon	¾"	6"	7¾"	P	1
G bracket	¾"	7"	7"	P	2

Material Key: P–poplar



Project Designs: ©Christine Anderson
Photograph: John Hetherington
Illustrations: Roxanne LeMoine

FROM BODY SHOP TO WORKSHOP, THIS FINISH DOES

When a *WOOD*® magazine project requires a brightly colored or clear finish that resists hard knocks, we call on Des Moines auto-body specialist Bob McFarlin. That's because he sprays a Corvette or a cabinet without switching paints.

Print this article

If you own a late-model automobile, you've probably heard or read the term "clearcoat." In the automotive industry, that's the literal description for the protective coating of clear acrylic urethane that goes over your vehicle's body color. This clearcoat resists scratches, dirt, oil, grease, solvents, and most important, the sun's ultraviolet rays that fade and break down color finishes over the years.

Well, if you apply the same automotive finish—either a colored acrylic urethane basecoat followed by a clearcoat or the clearcoat alone—to wood, you'll end up duplicating the bright gloss and durability of a new car's factory finish. What's more, you'll find that applying the finish is probably even easier and more fool-proof than spraying lacquer or other clear coatings woodworkers use. That's what Des Moines auto-body specialist Bob McFarlin proved to us.

Bob does all his paint mixing right in the spray-gun can. To the paint, he'll add a proportional part of stabilizer.

Picking your paint

When the *WOOD* magazine editors involved with designing Idea Shop™ 2 (see the September 1994 issue) decided to paint the shop's ultilitarian cabinetry, they turned to Bob for help. Using the same finishing materials and techniques he does every day on automobiles, Bob delivered a defectfree, bright-red and clear-natural semi-gloss finish that, he says, "Will even resist paint remover!" (Note the painted cabinet in the photo *opposite page*.)

The finishing materials he chooses belong to Sherwin Williams' Ultra System™ of automotive finishes (for more information, refer to the Buying Guide). The line of acrylic urethanes includes three types of undercoats (clear, gray primer, and red primer), three individual topcoats (in hundreds of colors), and four clearcoats. But, according to Bob, unless you want to switch from finishing wood to painting autos, you don't need to become familiar with all of them.

"Basically," says Bob, "paint [topcoats] and clearcoat that require a hardener will set up in a spray gun if you leave it there for a few hours. A topcoat with only a reducer or stabilizer in it can go right back in the can, so that's the paint you want to use. Then, you'll need a stabilizer to add to the paint and a stabilizer and hardener for the clearcoat. I can pretty much use the FAST paint stabilizer and a MEDIUM clearcoat stabilizer year around."

Bob also points out that adding flatteners allow you to regulate the sheen you want on the finish, such as an eggshell finish rather than the high gloss that clearcoat gives right out of the can. "You add them to both the colors and the clearcoat," he notes. "You also can knock the gloss down with steel wool if you don't want to fool with a flattener."

So what product from the Ultra System does Bob recommend for a first-time user? He doesn't hesitate. "Ultra 7000 basecoat paint is the easiest to work with. You can spray it from 6-18" from the workpiece, and if you have a problem, you just go back in 10 minutes and sand and buff the spot. Then, you spray it with the Ultra 7000 universal clearcoat. It's real user friendly."

There's another advantage, too, says Bob. "You can seal a wood project with the primer, wait 15 minutes, then put color on. In ten minutes, it's dry and you can

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clearcoat it. The clearcoat dries to the touch after 30 minutes [it fully cures in 24 hours]. So if you're spraying on a couple of colors before clearcoating, you can tape off each one after 10 minutes."

Ultra dos and don'ts

"To use the Ultra basecoat system on wood, it doesn't matter how finely you sand," says Bob. "On the Idea Shop 2 cabinets made of birch plywood, I sprayed two coats of primer-surfacer before painting, then scuff-sanded with 600 grit to knock off the nibs that rose from the grain. That was only on the plywood. The grain didn't rise on the solid wood that I primed with clear sealer. Even applied over a stain, there's no problem."

Mixing is easy, too, according to Bob. Basecoat colors require a ratio of one part paint to one part stabilizer (you can get a mixing/measuring stick at the dealer). For every four parts of clearcoat, you add two parts reducer and one part hardener. And Bob uses the same spraying pressure for paint and clearcoat (about 45 psi) as he would for spraying a lacquer finish on wood. Even using an HVLP sprayer, the pressure must be 45 psi. And, because urethane produces toxic fumes, all spraying should be done while wearing a gas/vapor respirator approved by the National Institute for Occupational Safety and Health (NIOSH). For cleanup, Bob uses lacquer thinner.

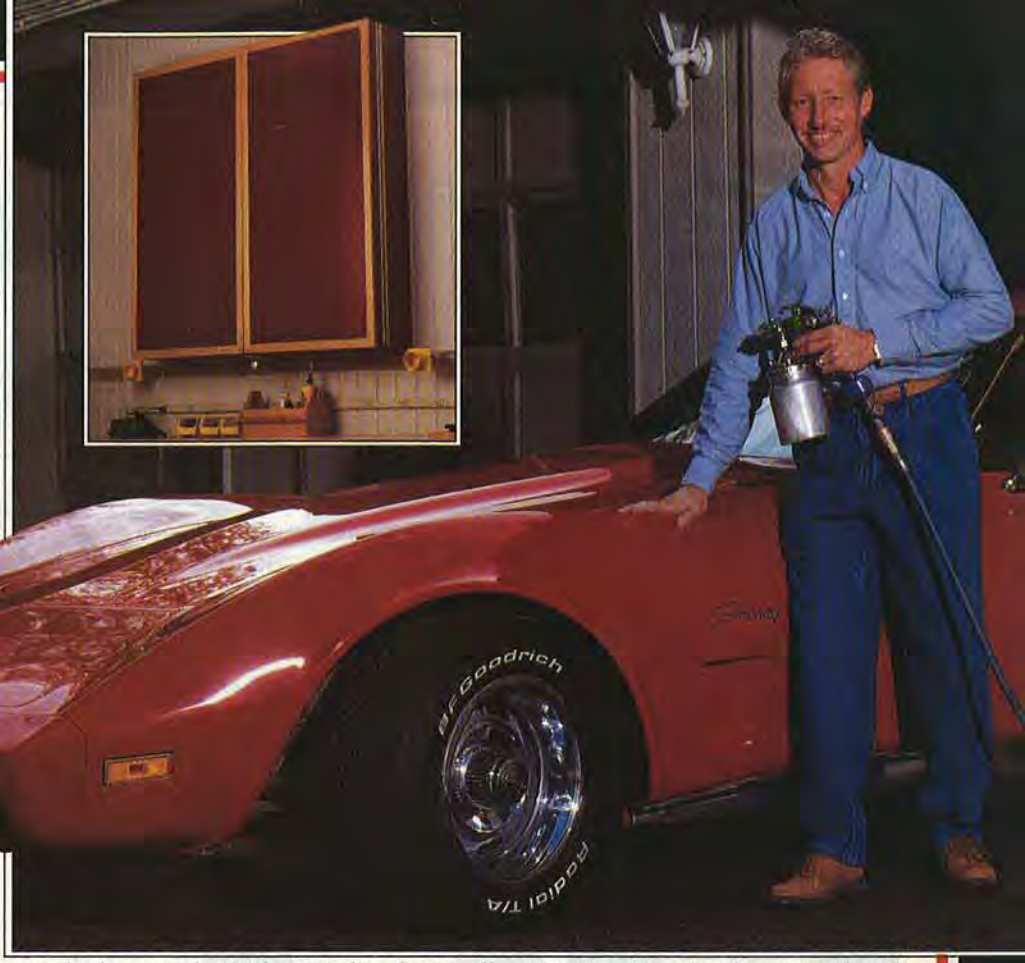
"But," Bob cautions, "you have to remember that there is a temperature minimum of 68 degrees for spraying. Acrylic urethane won't activate lower than that."

Humidity isn't much of a problem, though, says the auto-body specialist. "You can spray them at all humidity levels, whereas old-type lacquers would just turn white. These acrylic urethanes bond quicker with humidity."

What about coverage? Unlike house paint, where coverage is stated on the label, automotive finishes make no coverage claims. But Bob estimates that it takes 12 ounces of paint to put two coats on a 20-square-foot surface, and about the same for clearcoat.

What about getting dust in the paint? "Just sand it back with 1200-grit paper, then respray or cover it with clearcoat," Bob replies. And unevenness in the basecoat? "The clearcoat will take care of that. It's a basic product for someone who has never sprayed anything."

Written by Peter J. Stephano Photographs: John Heatherington



Auto-body specialist Bob McFarlin shows off a 1975 Corvette that he sprayed with the same Ultra 7000 basecoat and clearcoat that he used to finish the wooden cabinets featured in IDEA SHOP™ 2. (See inset.)

Buying Guide

Ultra System™ automotive finishes. Ultra-Fill II Acrylic Urethane Sealer (transparent for clear finishes) and Ultra-Fill II Acrylic Urethane Primer Surfacer (tinted as an undercoat for painted finishes), both about $15 quart; Ultra 7000 Basecoat (paint), starting at about $15 qt., depending on color; Ultra 7000 Basecoat Stabilizer, about $9 qt.; Ultra 7000 Universal Acrylic Urethane Clearcoat CC-645, about $17 qt.; Reducer, about $7 qt.; CCH-690 Clearcoat hardener, about $24 pt. Available from Sherwin Williams Automotive Finish stores nationwide (see your local Yellow Pages). Note that other paint manufacturers also produce similar automotive finishing systems.

PLANT STAND WITH *Panache*

Corian moves from show homes to home shops

Corian, long favored for custom-home countertops, has intrigued woodworkers for years. Trouble is, getting hold of the stuff has been difficult—you had to know a countertop fabricator who could toss you some scraps of it from time to time. Now, DuPont is making it available to home woodworkers. To try your hand at working with Corian, build this plant stand. We'll give you hints along the way that'll have you working it like a pro in no time.

You'll probably be surprised when you find how easily DuPont Corian, a combination of minerals and acrylic, works with ordinary woodworking tools. To help you get started, we've come up with some helpful hints for working with Corian. Look for the italicized paragraphs throughout the how-to instructions for tips on working with this newly available material.

Print this article

Start with the legs

1 Cut the four legs (A) to the size shown in the Bill of Materials. Cut grooves at the top of each leg where shown in the Leg drawing, *right*, using a ¼" slot cutter in your table-mounted router. Adjust the cutting height of the bit to place the bottom of the cutter blade ⅝" above the table. Set the table's fence for ½" cutting depth. (See the Leg Groove detail, *right*.) Groove two adjacent faces on each leg.

2 Cut the four aprons (B) to size. Keeping the router-table fence in position, lower the slot cutter so the bottom of the blade is ¼" above the table. Refer to the Apron Groove detail, *right*, and cut the slots on one edge and both ends of each apron.

3 Next, drill the two dowel holes in the legs where shown, using a drill press for accuracy. Be sure to drill the holes on the same faces you grooved earlier.

Now, rout the chamfers

1 Lay out the stopped chamfers on one leg, following the dimensions shown on the Leg drawing. Chuck a chamfer bit in your table-mounted router, then install a long auxiliary fence, as shown in the Stopblocks drawing, *right*. Set the bit height and fence to cut a chamfer 3⁄16" wide and deep, as shown in the Leg Chamfer detail, *right*. For uniformity among the legs, use stopblocks for routing.

2 Make all of the lower chamfers first. On the leg with the layout marks, cut the chamfer from the bottom of the leg to the stop mark. Without moving the leg, shut off the router, and clamp a stopblock to the fence at the bottom of the leg, shown as A in the Stopblocks drawing. Now, rout the four corners of each leg.

3 Next, rout the middle chamfers. Remove stopblock A. Then position the leg on the router table to begin the middle chamfer where marked near the bottom of the leg. Clamp a block to the fence at

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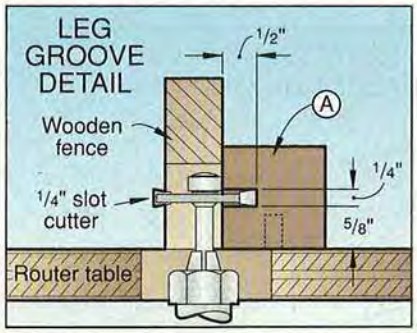

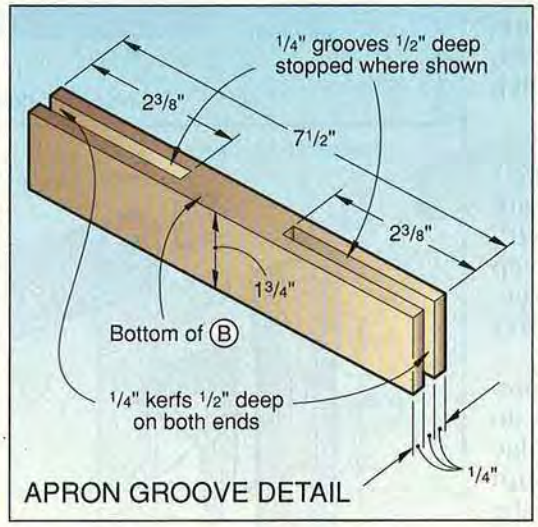

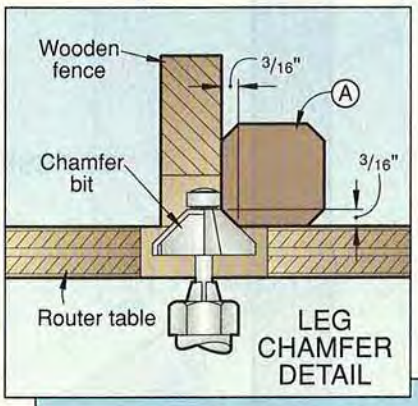

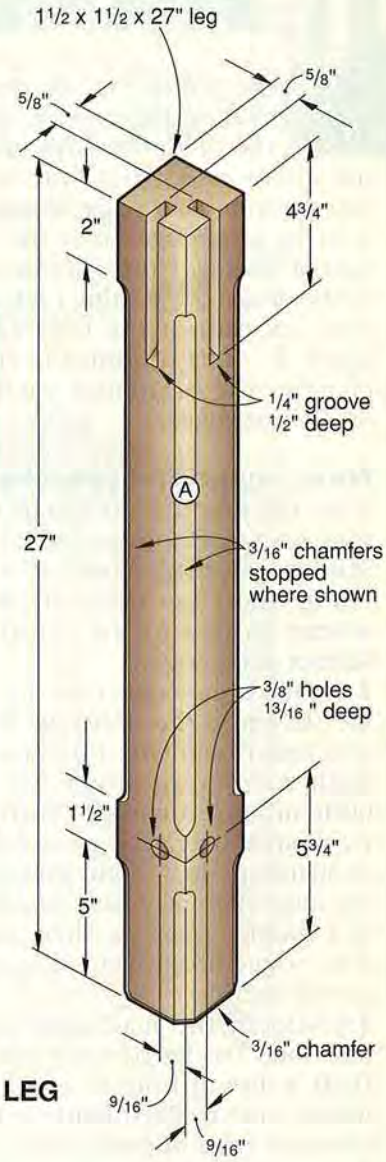

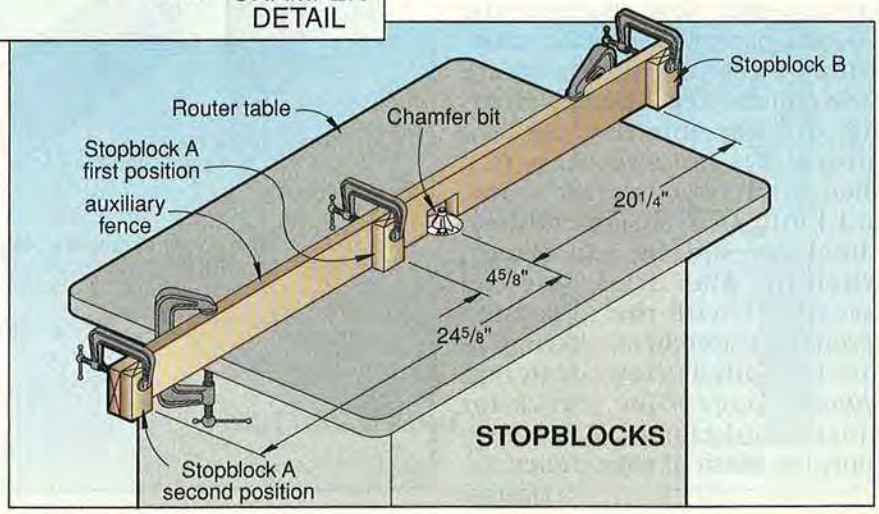

PLANT STAND

the top of the leg, shown as B in the drawing. Form the chamfer, stopping at the upper mark. Hold the leg in that position, and place stopblock A in its new position at the bottom of the leg. Now, rout the rest of the chamfers, starting each pass with the top of the leg against block B. After routing the sides, chamfer the bottom of each leg on all four edges.

Next, shape the stretchers

1 For the stretchers (C), start with two pieces of stock ¾×1¾×16". Saw or rout a ½" rabbet ¼" deep along one edge of each piece, where shown in the Stretcher Rabbet detail, *right*.

2 On the other edge, rout the profile shown in the drawing. To do this, first round over the top edge with a ¼" round-over bit and table-mounted router. Turn the workpiece over, and raise the bit to shape the half-round portion of the edge. You may have to do this in a couple of passes. Then, install a ⅜" round-nose bit to shape the coved bottom.

3 Crosscut the machined stock into four 7½" lengths for parts C. Drill a dowel hole at each end where shown. Then, miter-cut the rabbeted edge of each piece, as in the Leg Assembly drawing, *right*.

4 Sand all parts with 150- and 220-grit abrasive. Now, assemble the wooden parts of the plant stand. Using dowels and splines where shown in the Leg Assembly drawing, dry-assemble the legs (A), aprons (B), and stretchers (C). Then, apply woodworker's glue, and build two leg assemblies. Check for square, and clamp. When the glue dries, join the assemblies with the remaining aprons and stretchers, referring to the Exploded View drawing, *opposite page*. Glue, check for square, and clamp. When dry, apply the finish of your choice.

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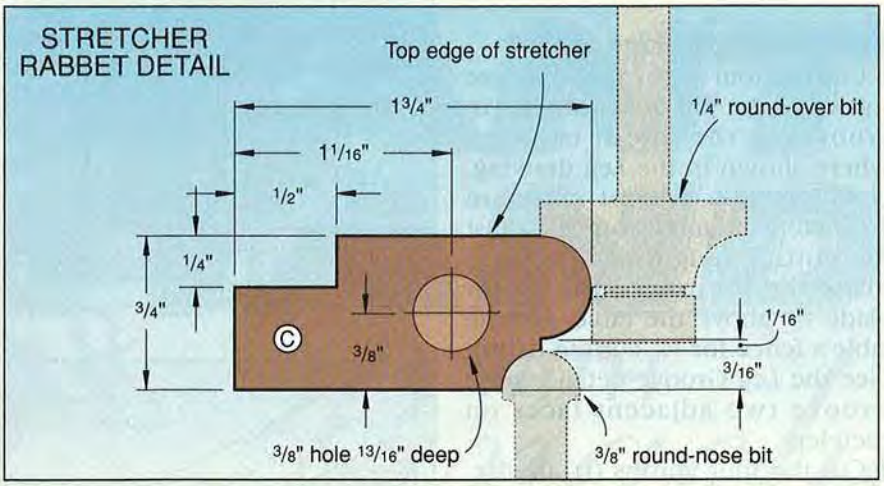
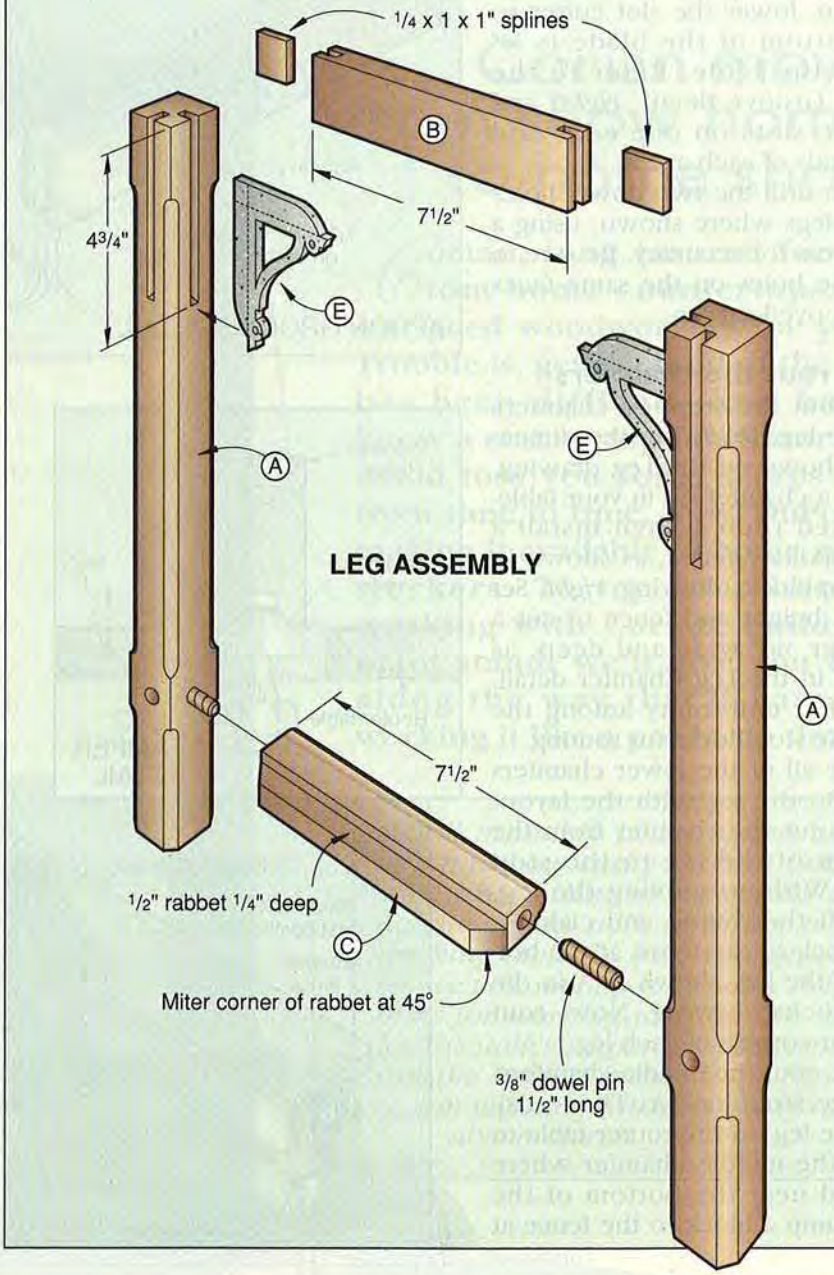
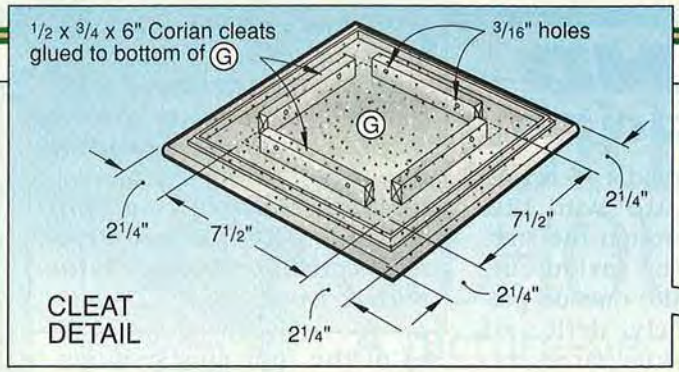
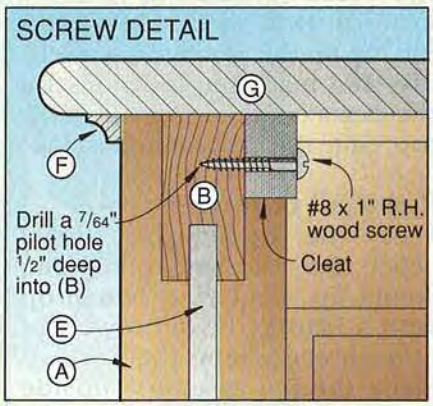
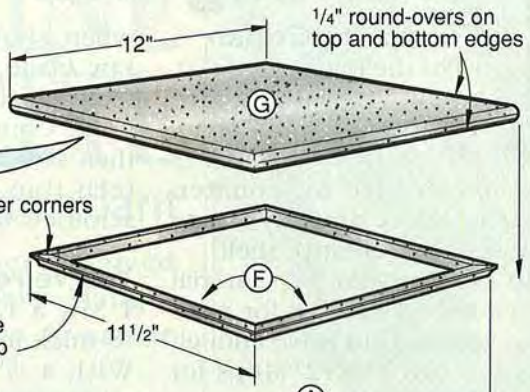
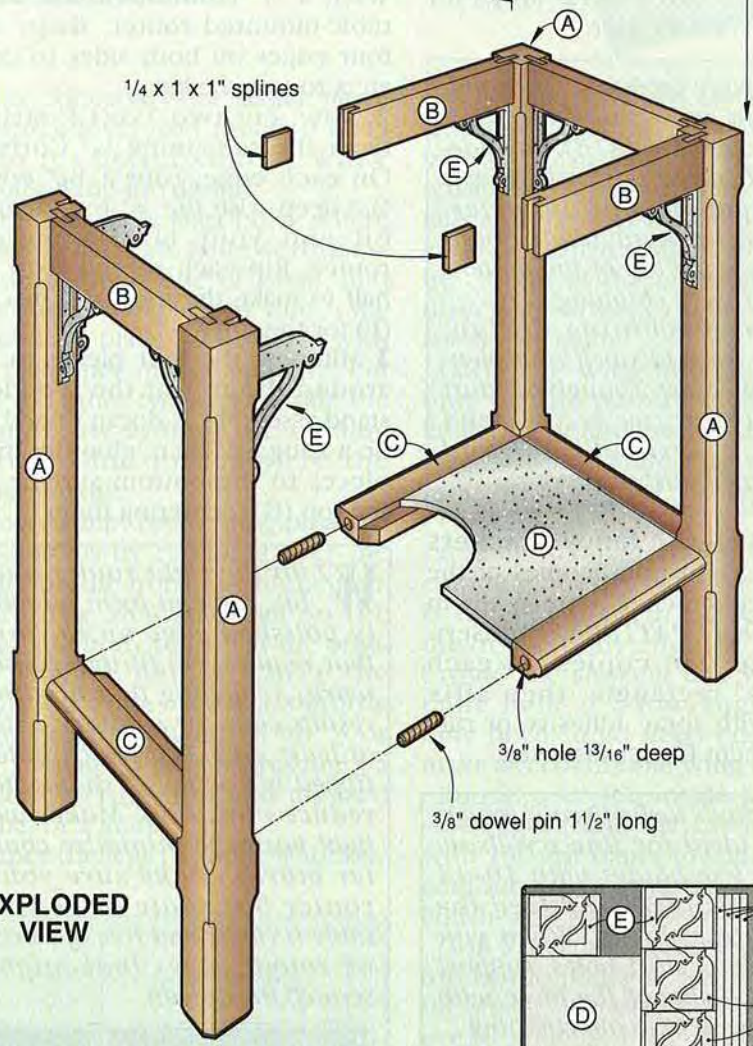












EXPLODED VIEW

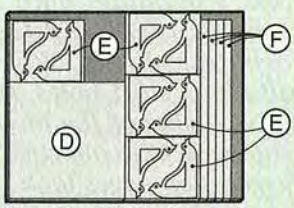
Bill of Materials

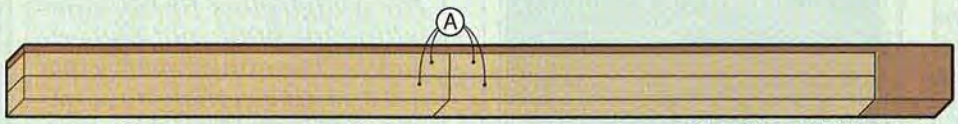
Part	Finished Size T	W	L	Matl.	Qty.
PLANT STAND					
A leg	1½"	1½"	27"	W	4
B aprons	¾"	1¾"	7½"	W	4
C stretchers	¾"	1¾"	7½"	W	4
D shelf	¼"	7½"	7½"	C	1
E brackets	¼"	3⅛"	3⅞"	C	8
F trim	¼"	½"	11½"	C	4
G top	½"	12"	12"	C	1

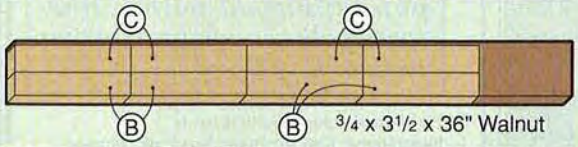
Materials Key: W–walnut; C–Corian

Buying Guide DuPont Corian. ½x12x15" sheet, about $33; ¼x12x15" sheet, about $20. We used one of each; the color shown is Sierra Dusk. There are 10 colors available in ½"; 6 in ¼". Leichtung Workshops, 4944 Commerce Parkway, Cleveland, OH 44128. Call 800/321-6840.

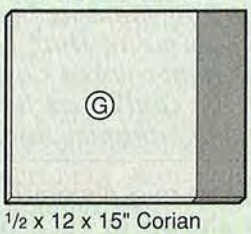
For sizes or colors other than those available above, call Art Specialties International, 800/724-4008. For more information about Corian, call DuPont at 800/426-7426.







CUTTING DIAGRAM



PLANT STAND
Working with Corian

Cut up the Corian

1 For the lower shelf (D), cut a 7½×7½" square from the ¼"-thick Corian. Although ¼" Corian is not recommended for countertops or tables, it is plenty strong for this small, decorative shelf.

2 Also cut from the ¼" material four 3⅞×4⅞" rectangles for parts E. Plan your cuts to leave enough to cut out two 1⅛×12" strips for the top trim (F) later.

On your tablesaw or radial-arm saw, install an alternate top bevel (ATB), carbide-tipped blade with about six teeth per inch of diameter. Raise a tablesaw blade about 1" above the top of the material to prevent chipping.

When machining Corian, expect an odd smell and plenty of fine dust. Though the dust is non-toxic, we recommend using a dust collector and wearing a dust mask.

Scrollsaw the fancy brackets

1 Make eight photocopies of the full-sized Bracket pattern (E) in the *WOOD PATTERNS™* insert. Arrange two copies on each 3⅞×4⅞" rectangle, then affix them with spray adhesive or rubber cement for scrollsawing.

Corian's lack of grain makes it ideal for fine scrollsaw work. Use blades with 10-14 teeth per inch, and feed the workpiece slowly. When you drill blade start holes, support the back side of the piece with scrapwood to avoid chipping.

Scrollsawn edges look chalky, but sanding cleans them up. For intricate patterns, however, we recommend that you go with a light-colored Corian to make the chalkiness less visible and to minimize sanding.

2 Drill the two decorative holes where shown in each bracket, then drill the blade start hole where shown. Thread a #5 scrollsaw blade (.039×.016" with 12½ teeth per inch) through the start hole. Complete the inside cut, then saw around the outside pattern line. Similarly, drill and scrollsaw the remaining brackets.

You've reached the top

1 Saw a 12×12" square from the ½"-thick material for the top (G). With a ¼" round-over bit and table-mounted router, shape all four edges on both sides to create a rounded edge.

2 Now, cut two 1⅛×12" strips from the remaining ¼" Corian. On each edge, rout a 3/16" cove 3/16" deep. Use the ⅜" round-nose bit and your table-mounted router. Rip each routed strip in half to make the four trim pieces (F) for the top.

3 Miter-cut the four pieces to fit around the top of the wooden stand assembly. It doesn't need to be a snug fit. Then, glue the trim pieces to the bottom surface of the top (G), centering them.

With the right router and bit, you can form a highly polished edge on Corian that requires no further finish work. Achieving that kind of results calls for a router with at least 2 hp. Opt for carbide-tipped bits with ½" shanks to reduce vibration. Make two light passes to minimize chatter marks. Make sure your router baseplate or router table is clean and free of burrs or rough edges that might scratch the Corian.

Carbide-tipped router bits cut Corian cleanly. Routed edges usually require no further finishing.

Corian can be joined to itself or other materials with a wide variety of adhesives. For the built-up edge on our plant stand, we recommend gap-filling cyanoacrylate adhesive or five-minute epoxy. Silicone adhesive works great for joining Corian parts to wood.

4 Cut the four cleats shown in the Cleat detail from ½"-thick material. Drill where shown. Set the top on the wooden leg assembly, and mark the locations for the cleats on the underside of the top. Glue the cleats into position.

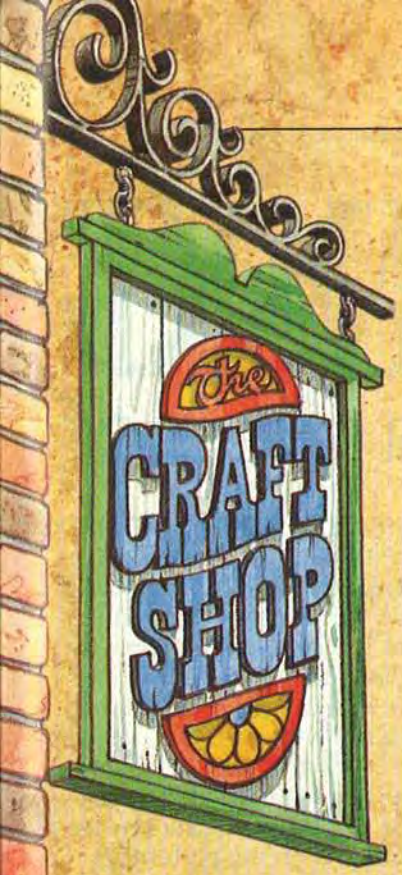
Put it all together

1 Lay the top on your workbench, the cleats and routed trim facing up. (Pad your benchtop with a blanket or old towels to prevent scratching the Corian.) Place the leg assembly upside down on the top, then screw the top to the aprons through the holes in the cleats, as shown in the Screw detail.

2 Glue the decorative brackets (E) into the grooves in the legs (A) and aprons (B). (We used clear silicone adhesive and sealer.) Stand the assembly up. Then, using the silicone, glue the lower shelf (D) into place in the rabbeted recess on the stretchers.

To finish Corian, just sand it and buff it for a matte, semi-gloss, or high-gloss surface. For a matte finish, start with 220-grit sandpaper. Wipe the sanding dust off, then buff the surface with a green Scotch-Brite pad until you achieve the sheen you want. For a semi-gloss finish, sand with 220-grit paper, followed by 400-grit paper. Buff with a gray or white Scotch-Brite pad. For a high-gloss finish, sand with 220-, 400-, and 600-grit papers. Then finish with white automotive polishing compound, buffed with a low-speed polisher equipped with a wool pad.

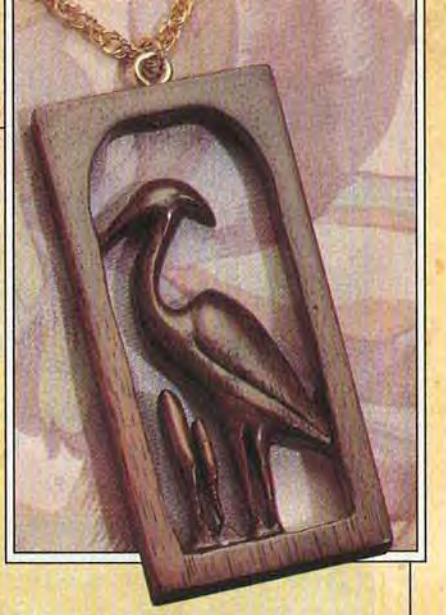
Photographs: John Hetherington
Illustrations: Kim Downing; Roxanne Lemoine
Written by: Tom Jackson; Larry Johnston



SHORELINE SILHOUETTE

A picture-perfect pendant

Simple carving lifts this scrollsawed pendant far above the ordinary. Hang it from a plain chain necklace to create an artistic fashion accent.



***Note:** You'll need ¼"-thick stock (we used walnut) to make the shoreline pendant. If your dealer doesn't sell thin stock, plane or resaw thicker material.*

Photocopy the full-sized pattern, *below right*. Center the copy on an oversized piece of stock (¼×2×4" is a good size), and adhere it with rubber cement or spray adhesive. The larger piece of stock gives you more to hang onto for better control while scrollsawing the design.

Drill 1/16" blade start holes where shown. Thread your scrollsaw blade through one of them, and cut along the pattern line. (We used a #4 blade, .033×.014" with 15 teeth per inch.) Similarly, cut out the other two areas inside the frame. Saw around the outside pattern line to complete the roughing-out.

Now, sculpt the wading bird and the cattails by rounding over the edges on the front side of the pendant. The shaded areas on the head and body remain at the original surface height. Carve the rounded edges with a shallow gouge (a palm-handled no. 3 or no. 5 about ¼" wide works fine), a rotary carving tool and tapered stone, or a knife.

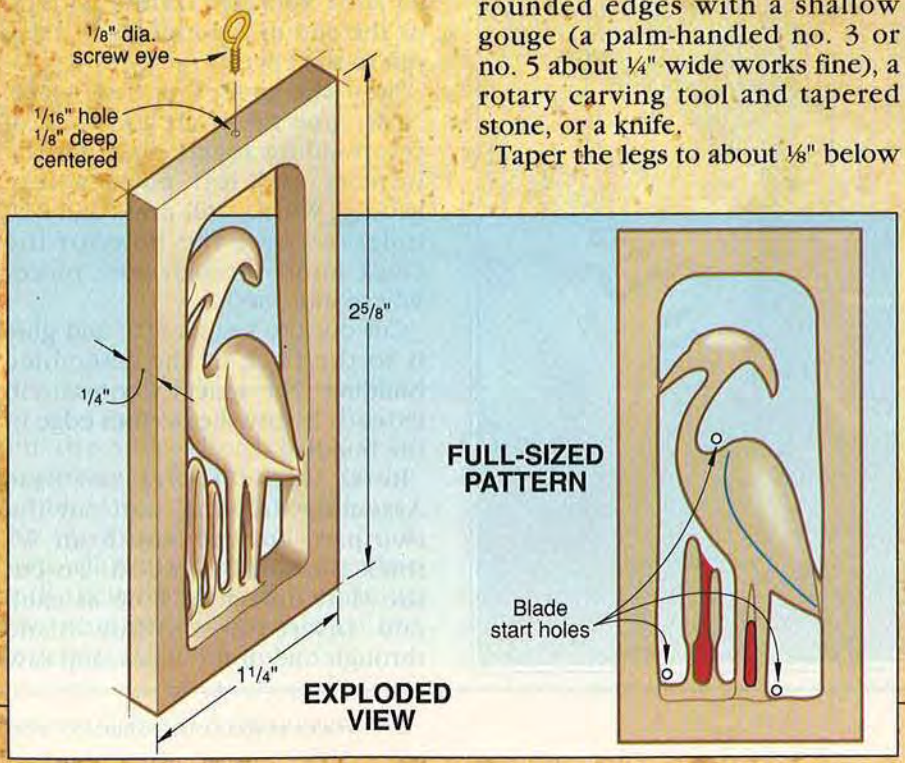
Taper the legs to about ⅛" below the original surface at the feet. Cut the cattails to about 1/16" below the surface. Open up the red-shaded areas between the cattails and the legs with the tip of a knife or a small straight rotary bit. Be careful of the changing grain direction; always carve with or across the grain.

Carve the wing line (shown in blue on the pattern) with your knife or a pointed rotary stone. To carve it with a knife, first make an incision along the pattern line. (This cut, which allows you to carve up to a pattern line without chipping out the wood beyond it, is called a *stop cut*). Then, pare down the body slightly, cutting toward the stop-cut line with the knife held at a low angle. You only need to go deep enough to make a recognizable wing line.

Round over the inside and outside edges. Sand the carved areas with 150-grit paper to smooth the contours, then sand the back flat. Finish-sand with 220- and 320-grit.

Drill a 1/16" hole centered on the top of the pendant. Snip or grind the shank of a #217½ brass screw eye to ⅛" long, then epoxy it into the hole. Orient the screw eye straight across the top.

Apply a clear finish to the pendant. Polish the screw eye with #0000 steel wool, and slip a 24" necklace chain through it. (You can buy a suitable chain necklace at a department store's costume-jewelry counter.)

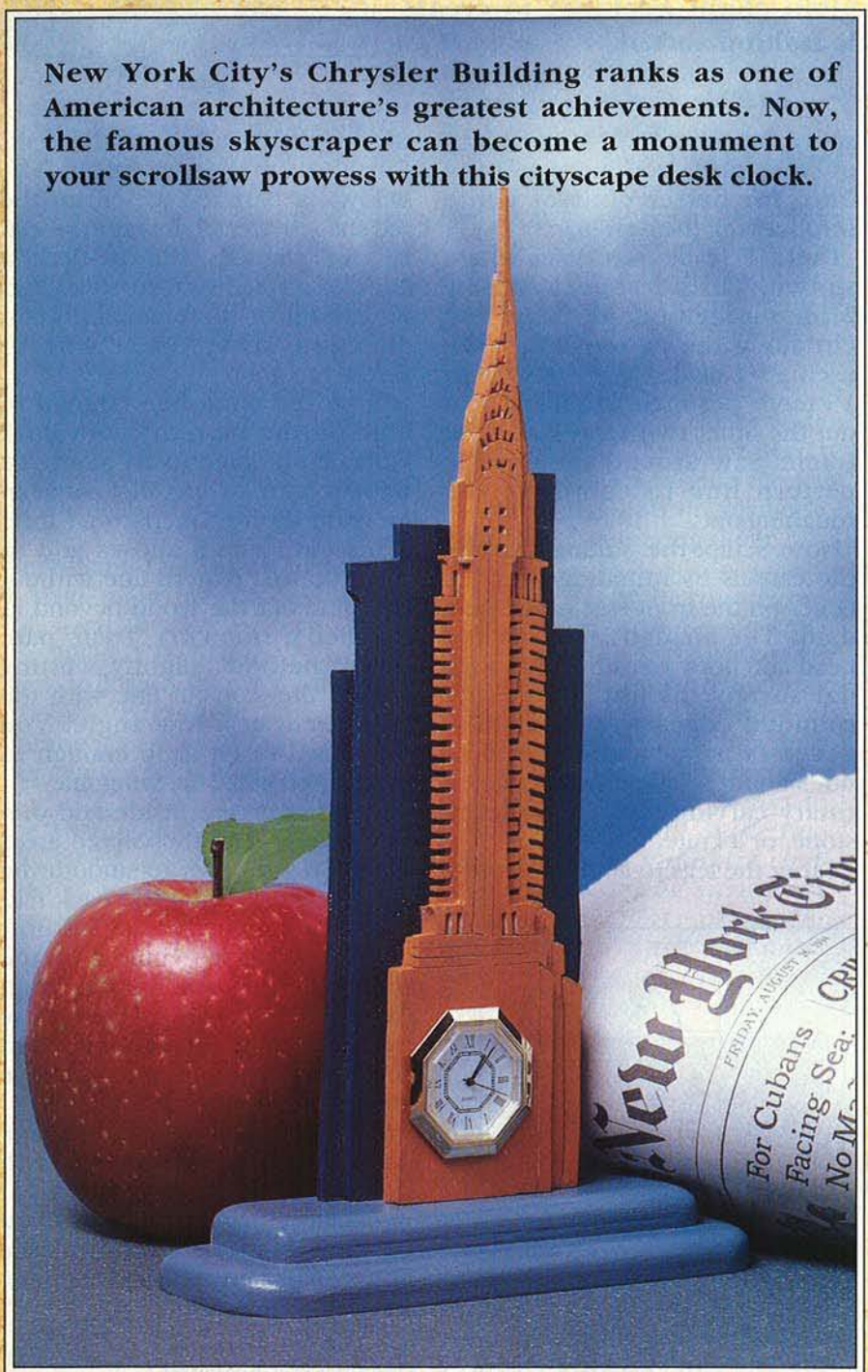


Project Design: © Bob Munroe
Photograph: John Hetherington
Illustrations: Kim Downing

TOWERING

Scrollsaw yourself a slice of

New York City's Chrysler Building ranks as one of American architecture's greatest achievements. Now, the famous skyscraper can become a monument to your scrollsaw prowess with this cityscape desk clock.



Transfer the patterns in the *WOOD PATTERNS™* in the center of the magazine to ⅛"-thick stock. (We used Baltic birch plywood.)

Cut out the two skyline parts (A and B). Glue them together with a few spots of cyanoacrylate adhesive or woodworker's glue, keeping the bottoms flush. The narrower piece will be about centered on the other, as shown by the dotted line on the pattern.

Next, scrollsaw the Chrysler building's two parts (D and E). A #2 blade (.028×.013" with 22 teeth per inch) works best for the fine detail lines and small interior cuts. You don't need to drill any blade start holes—you can begin all cuts from the outside.

Begin sawing along the outside pattern line, making each inside cut or detail line as you come to it. Many inside lines are stopped, so keep your eye on the pattern. At the end of a stopped line, back out to the edge.

Sand the pieces as necessary. Now, glue the front and back of the building together. Align the bottom and left edge where shown. With a drill press and 1⅜" holesaw, bore the hole for the clock insert through both pieces where indicated.

Cut out the spacer (C), and glue it to the back of the assembled building. The spacer's bottom tab extends below the bottom edge of the building.

Refer to the Tower and Base Assembly drawing, and cut the two parts for the base from ⅜"-thick pine or basswood. To cut the slot, drill a ⅛" hole at each end. Insert the scrollsaw blade through one of the holes, and saw

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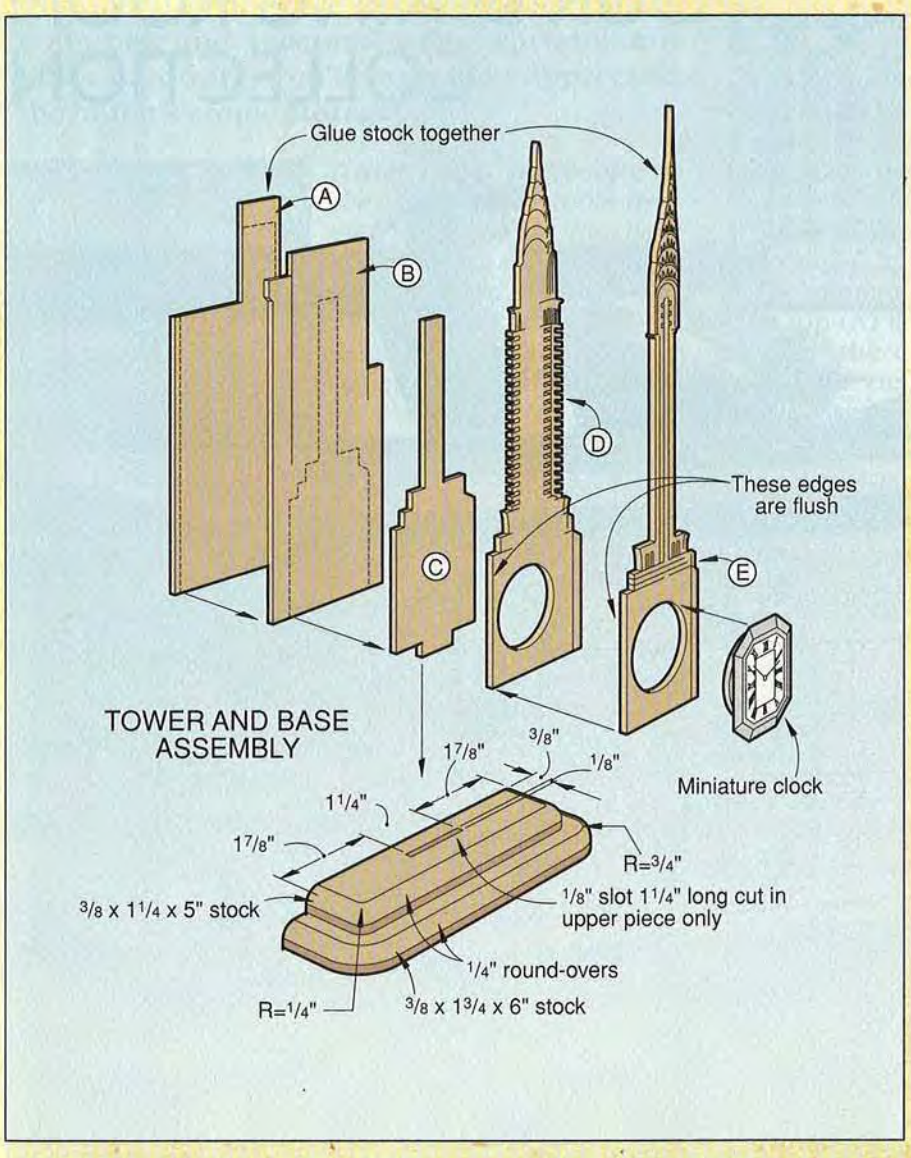
TIMEPIECE
the Big Apple



out the slot. Then chuck a ¼" round-over bit in your table-mounted router, and round over the top front and ends of both parts. Glue the base parts together with their backs flush, centering the top piece side-to-side on the bottom part.

Color your skyscraper

Paint the building, skyline, and base with acrylic artist's colors. When you paint the skyline, leave unpainted areas for gluing on the building. Paint both sides of the skyline and the building, but not the back of the spacer.

We mixed the colors shown using five standard acrylics—Mars black, titanium white, phthalocyanine blue, brilliant yellow, and burnt sienna. (You can buy the paints at an art-supply store.) Here are the recipes:

- **Building:** one part burnt sienna and three parts brilliant yellow.
- **Skyline:** equal parts Mars black, titanium white, and phthalocyanine blue.
- **Base:** four parts titanium white and one part Mars black, then add a tiny amount of phthalocyanine blue to make concrete gray.

After painting the parts, coat the building with a clear gloss finish compatible with the acrylic paints. (We used Delta's Home Decor gloss acrylic varnish, available from craft-supply dealers.) Apply a satin finish to the base and skyline.

Glue the building to the skyline, approximately centering it on the background. Let the spacer tab extend below the edge of the skyline. Then, insert the tab into the slot on the base. To center the building and skyline on the base, trim the edge of the tab if necessary. When properly positioned, glue the assembled cutouts in place. Install the clock insert.

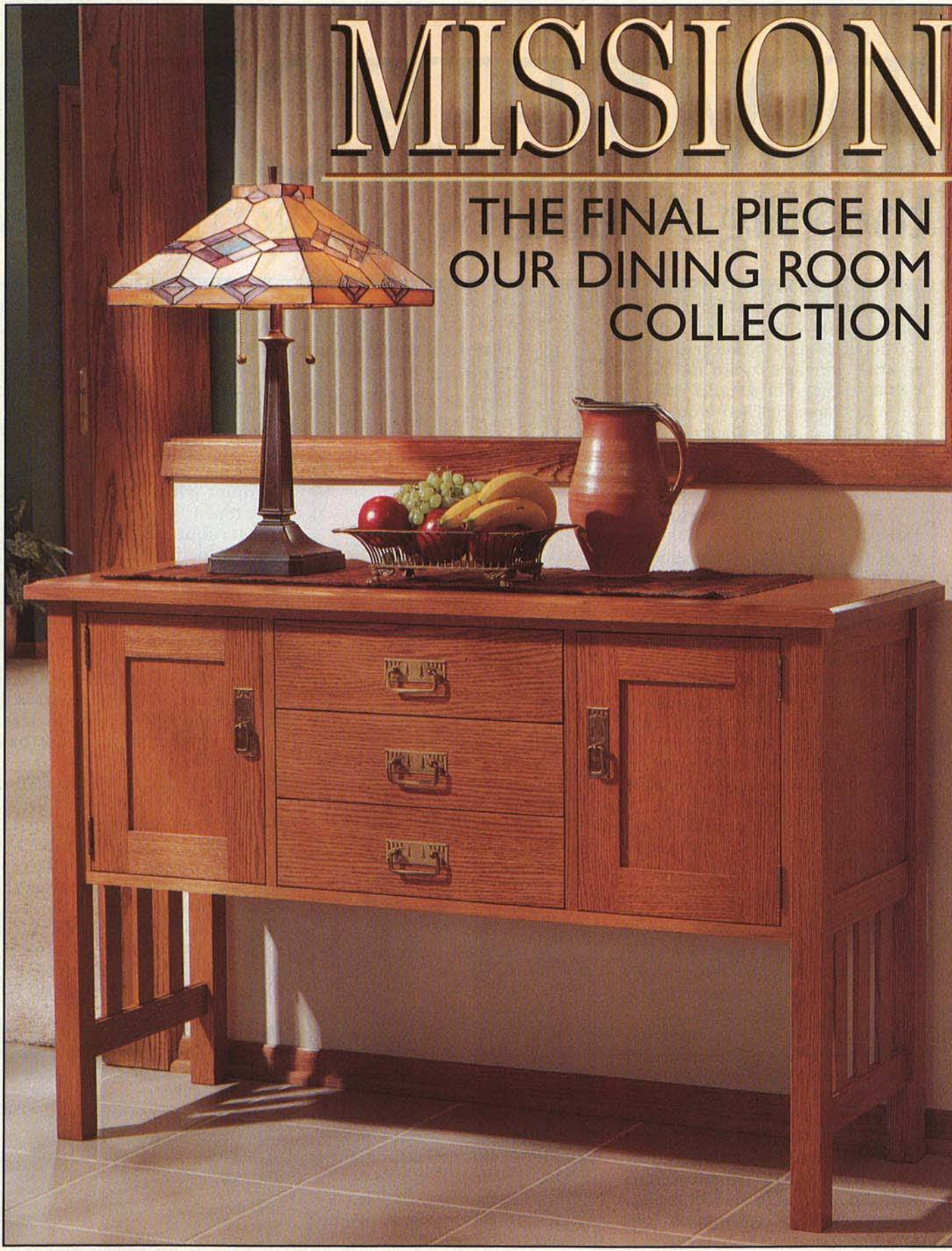
Buying Guide

Clock insert. Octagonal insert with quartz movement, item no. 200114, $10.50 each plus $3.15 per order postage in U.S., Schlabaugh and Sons, 720 14th St., Kalona, IA 52247, or call 800/346-9663 to order.

Project Design: Nancy Burgan
Photograph: King Au
Illustrations: Kim Downing

MISSION

THE FINAL PIECE IN OUR DINING ROOM COLLECTION



ADDITION

Either as a stand-alone project or as a complement to our table and chairs featured in issues 59 and 60, you'll find the buffet a worthy addition to your home's decor. Made from oak and accented with reproduction brass hardware, you'll especially appreciate the buffet's ample storage.

Note: *For a photocopy of the mission-style table article (issue 59) or the chair article (issue 60), send a self-addressed stamped #10 envelope and $2 to WOOD® Magazine's Mission Dining Set, 1912 Grand Avenue, Des Moines, IA 50309-3379.*

Let's begin with the carcase assembly

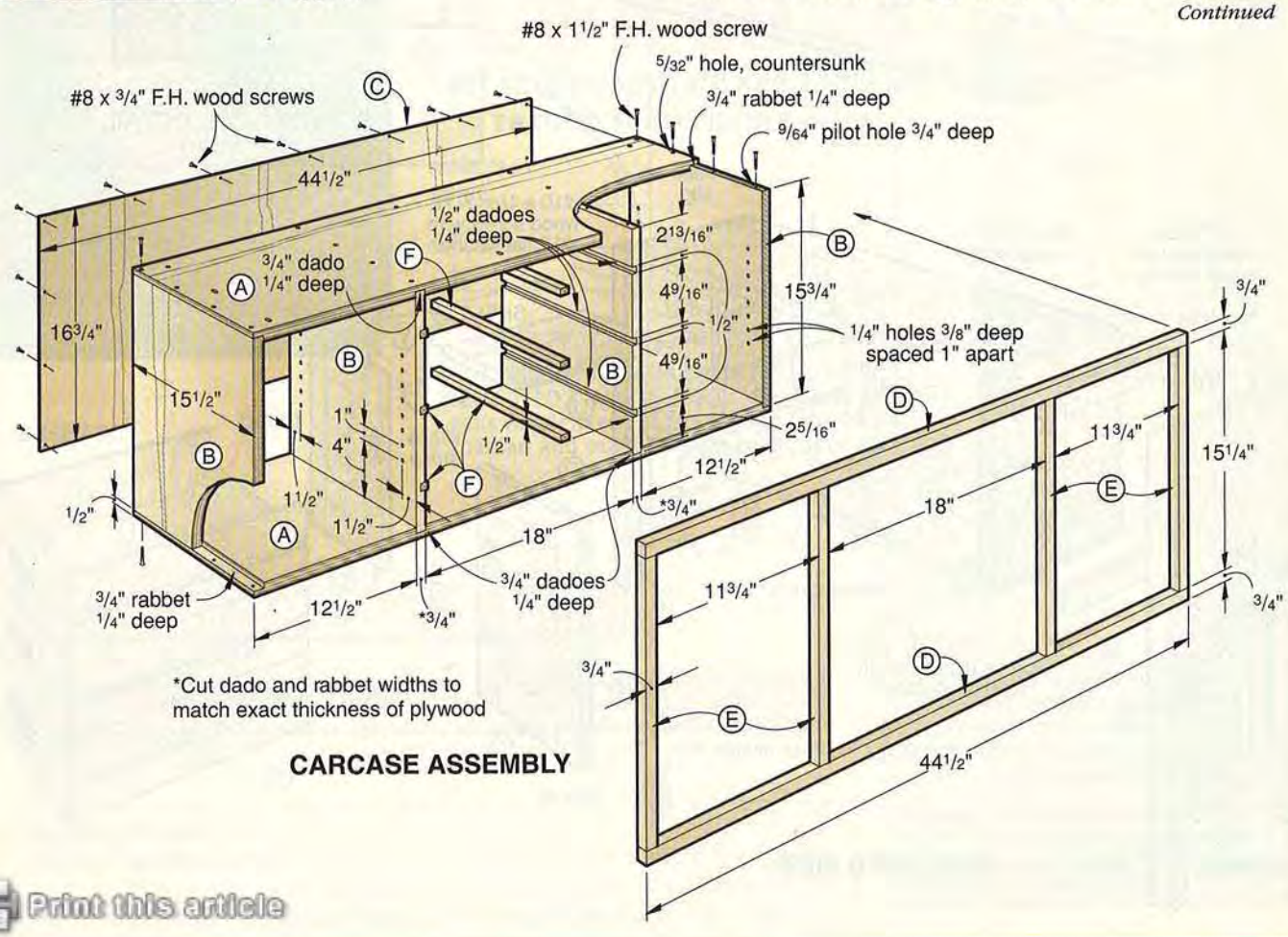
1 Cut the carcase top and bottom (A) and sides and dividers (B) to the sizes listed in the Bill of Materials from ¾" oak plywood.

2 Mark the locations of the dadoes and rabbets on the pieces (A, B) where dimensioned on the Carcase Assembly drawing. Cut or rout the rabbets and dadoes where marked.

3 Carefully mark the hole centerpoints on the inside face of the sides and dividers (B) where shown on the Carcase Assembly drawing. Clamp a fence to your drill press, set the depth gauge, and drill ¼" holes ⅜" deep where marked.

4 For mounting the solid-oak top (G) to the carcase top (A) later, drill four 3/16" holes in the back edge of the carcase top where shown on the Exploded View and accompanying Screw Hole detail. Using the same detail for reference, form four 3/16" slots ½" long along the front edge and

Continued



CARCASE ASSEMBLY

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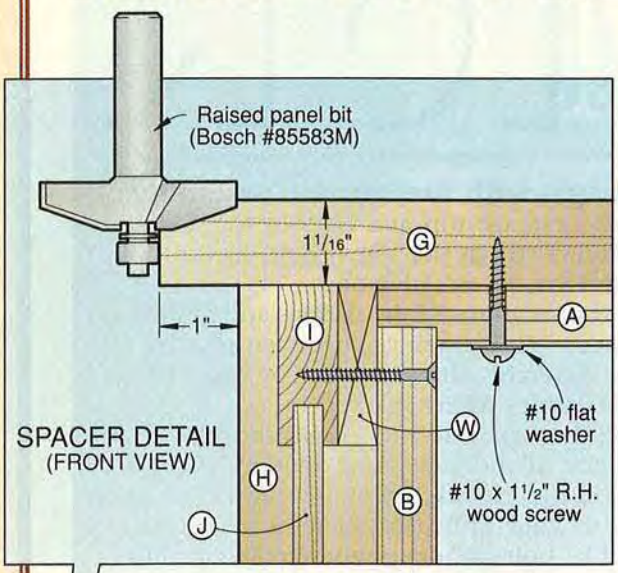
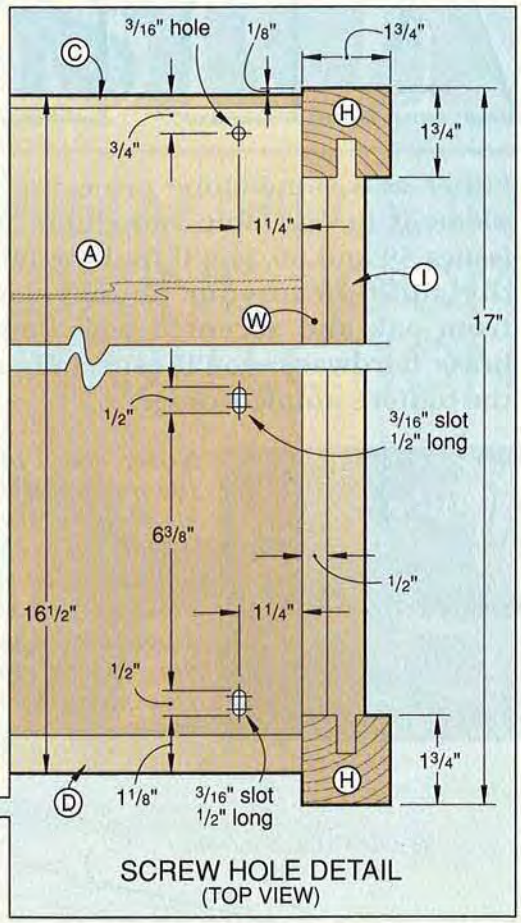
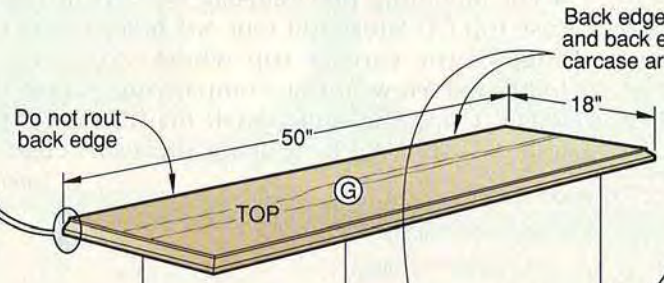
MISSION ADDITION

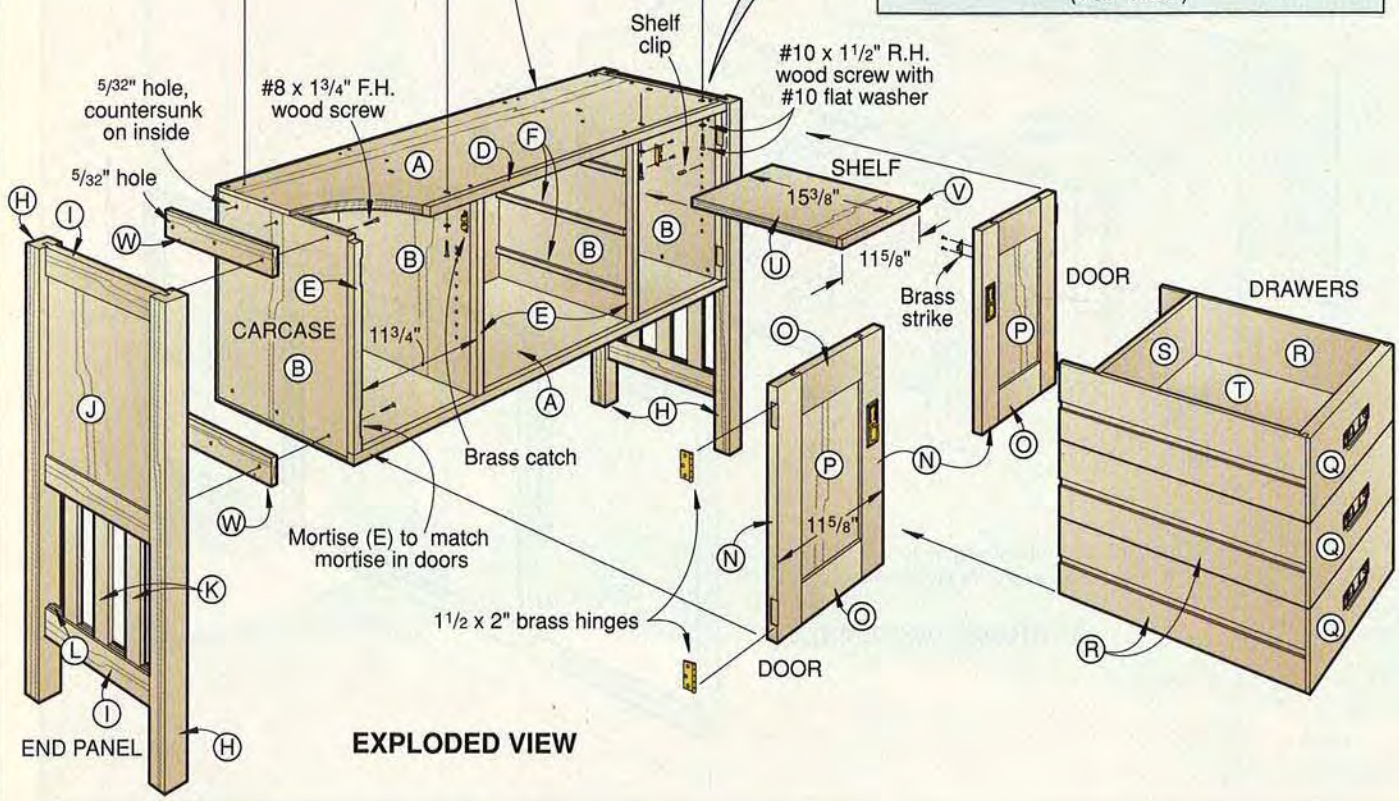


SPACER DETAIL
(FRONT VIEW)



SCREW HOLE DETAIL
(TOP VIEW)

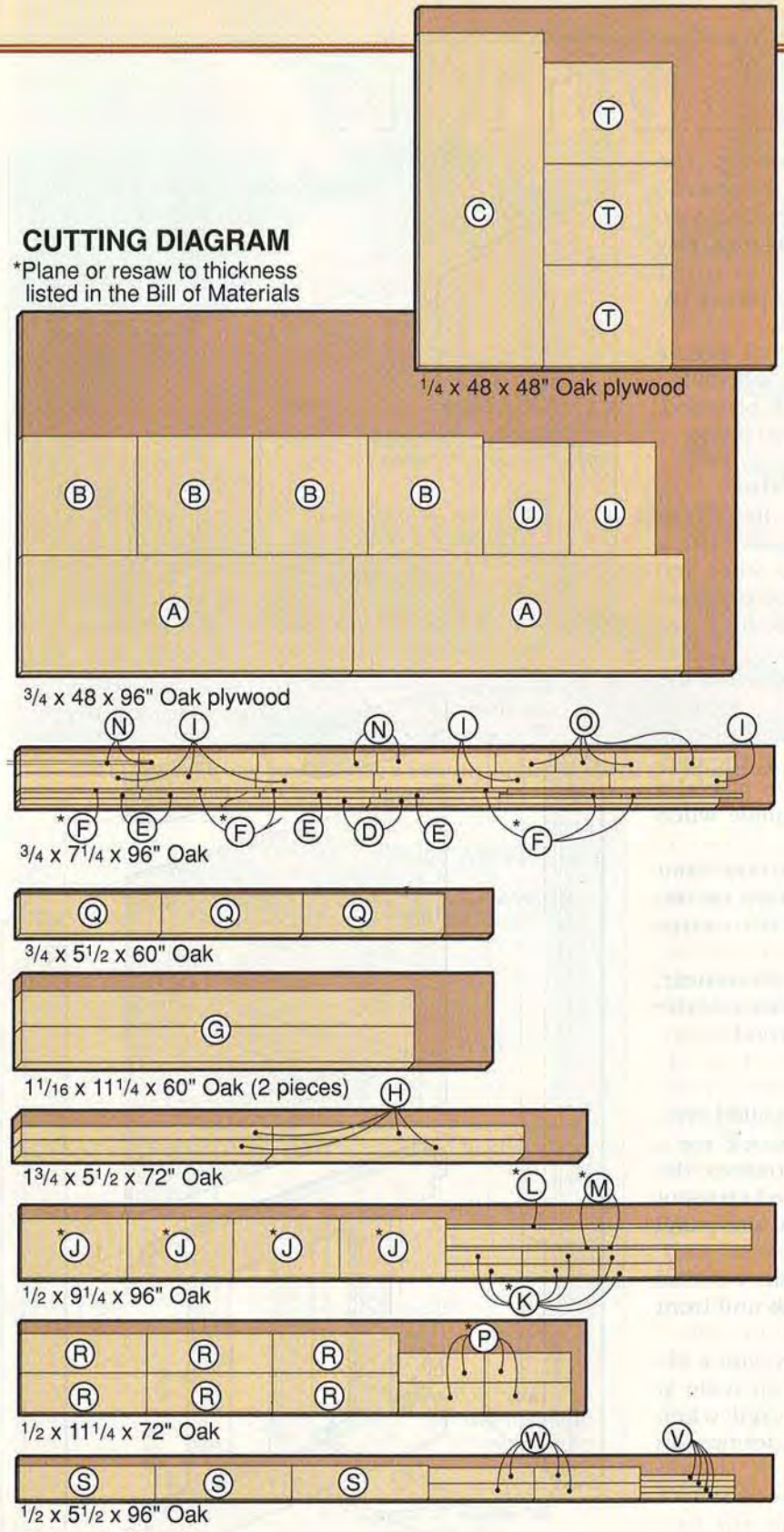




EXPLODED VIEW

CUTTING DIAGRAM

*Plane or resaw to thickness listed in the Bill of Materials



Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
CARCASE					
A top and bottom	¾"	15½"	44½"	OP	2
B sides and dividers	¾"	15½"	15¾"	OP	4
C back	¼"	44½"	16¾"	OP	1
FACE FRAME AND GUIDES					
D rails	¾"	¾"	44½"	O	2
E stiles	¾"	¾"	15¼"	O	4
F guides	½"	7/16"	15½"	O	6
TOP					
G* top	1 1/16"	18"	50"	EO	1
END-PANEL ASSEMBLIES					
H legs	1¾"	1¾"	32"	O	4
I rails	¾"	2"	15"	O	6
J* panels	⅜"	14⅞"	13⅝"	EO	2
K slats	⅜"	1¾"	9¾"	O	6
L* spacers	⅜"	⅝"	1¾"	O	8
M* spacers	⅜"	⅝"	2⅜"	O	8
DOORS					
N stiles	¾"	2½"	15⅛"	O	4
O rails	¾"	2½"	7⅝"	O	4
P* panels	¼"	7½"	11"	EO	2
DRAWERS					
Q fronts	¾"	5"	17⅞"	O	3
R sides	½"	5"	16"	O	6
S backs	½"	4¼"	17⅜"	O	3
T bottoms	¼"	13½"	17⅜"	OP	3
SHELVES AND SPACERS					
U shelves	¾"	14⅞"	11⅝"	OP	2
V banding	½"	¾"	11⅝"	O	2
W spacers	½"	2"	13½"	O	4

*Initially cut parts marked with an * oversized. Trim to finished size according to the instructions. Length is measured with the grain.

Materials Key: OP–oak plywood, O–oak, EO–edge-joined oak

Supplies: 4d finish nails; 16×¾" nails, #8×¾", #8×1½", #8×1¾" flathead wood screws; shelf clips; #10×1½" roundhead wood screws and #10 flat washers; stain, clear finish.

Buying Guide

Buffet hardware kit. Two pair of 1½×2" brass hinges (180D), two 3-way brass catches (193M), three drawer pulls (151A), two door pulls (151D). Kit no. 151/WMP. $79 ppd., CA residents add 6.5% sales tax. Crown City Hardware Company Inc., 1047 N. Allen Avenue, Pasadena, CA 91104 or call 818/794-1188.

MISSION ADDITION

one centered at each end of the carcase top. The slots allow the screws used to secure the top (G) to the carcase top (A) to move as the top expands and contracts with seasonal humidity changes.

5 Glue, screw, and clamp the carcase pieces (A, B) together, checking for square.

6 Cut the back (C) to the same overall dimensions as the length and height of the assembled carcase and cut it to size from ¼" oak plywood. Set the back aside for now; you'll attach it later.

Add face frame and drawer guides

1 Cut the face frame rails (D) and stiles (E) to size. Since ¾" plywood can vary in thickness slightly, be sure to cut or plane the stiles and rails to the same exact thickness as the plywood used for the carcase. For an authentic look, we recommend quarter-sawn oak.

2 Cut the drawer guides (F) to fit snugly into the dadoes and protrude 3/16".

3 Glue and clamp the guides in place, being careful not to let the guides bow out at the middle. (For even clamping pressure, we placed a piece of ¾×2×15½" stock over each guide when gluing it in place.)

4 Glue and clamp the rails and stiles to the front of the carcase. (We placed masking tape on the adjoining oak-plywood surfaces for easier removal of the glue squeeze-out.)

5 Being careful not to sand through the veneer, use a sanding block to sand the surfaces of the stiles and rails flush with the oak plywood.

Let's add the solid-oak top

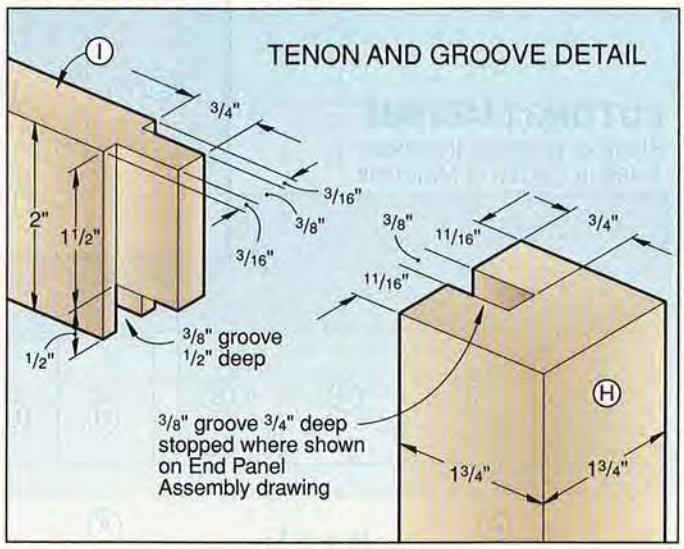
1 From 1 1/16"-thick oak (commonly called five-quarter stock), edge-join enough stock for a panel 19×52" for the top (G). Later, remove the clamps, scrape off the excess glue, and crosscut both ends for a 50"-long panel (leave the panel wide for now.)

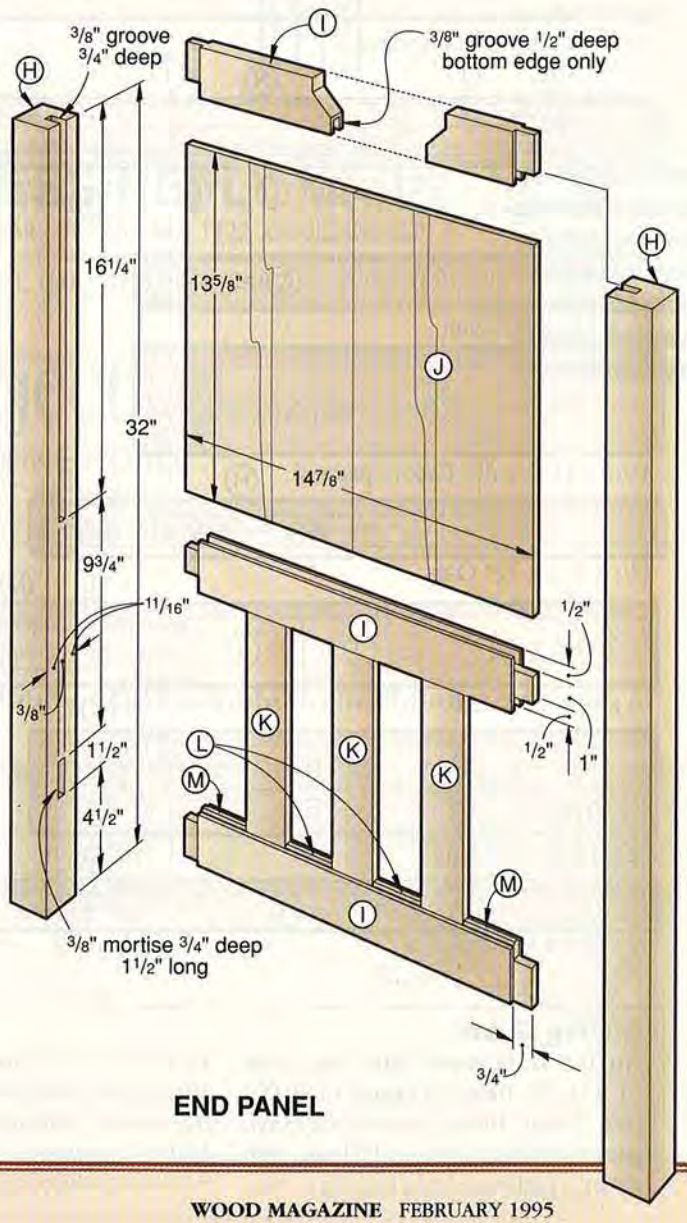
2 Fit your router with a raised-panel bit (we used a Bosch 85583M). Rout along the ends and front (not the back) edges of the top (G).

3 Now, rip the back edge of the top (G) for a finished width of 18". By leaving the top wide at first, you'll remove any tear-out caused when routing the back corners of the ends. Set the top aside for now; you'll add it later.

The end panels give it that mission look

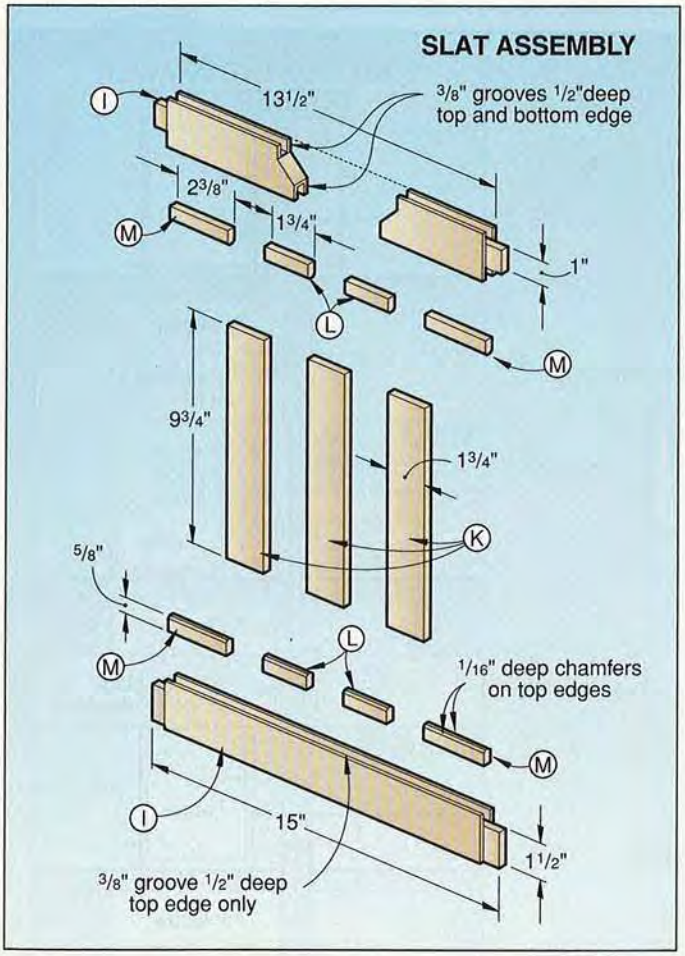
1 Cut the four legs (H) to size. Carefully mark the locations of the groove and mortise on one surface of each leg where dimensioned on the End Panel drawing.





END PANEL

Glue and clamp each end panel, using a framing square to check for square and flatness.



2 Cut or rout the grooves and mortises. (We used our tablesaw fitted with a dado blade to cut most of each groove. Then, we used our drill press fitted with a fence and mortising attachment to finish forming each groove and to form the mortises. You can also use your drill press to drill out most of the waste stock and remove the remaining stock with a sharp chisel.)

3 Cut the six rails (I) to size. Cut a ⅜" groove ½" deep centered along one top edge of the top and bottom rails and along both edges of the middle rails. See the Slat Assembly detail for reference.

4 From ⅜" stock (we planed thicker stock), edge-join enough stock for the two end panels (J). Form the panels slightly oversized and trim them to size later. Sand smooth.

5 Cut a pair of ¾" rabbets 3/16" deep across both ends of each rail (I) to form a ⅜" tenon ¾" long where shown on the Tenon and Groove detail.

6 Cut the end panel slats (K) to size.

7 Cut a piece of stock to ⅜×2×20" for spacers (L, M). Cut or rout a pair of 1/16" chamfers along both edges of the 20"-long strip. See the chamfers on the Slat Assembly detail. Rip a ⅝"-wide strip from both edges of the 20"-long strip, and then, crosscut the spacers (L, M) to length from the ⅜×⅝×20" strips.

8 Dry-clamp each end panel assembly (H–M) to check the fit of all the parts. Adjust if necessary. Glue and clamp each end panel, checking for square as shown in the photo *above*. (Allow the

Continued

end panels to float in the grooves. An inch or two of glue along the top center and bottom center of each panel is all that's needed to keep the panels from rattling in the grooves.)

Construct the two frame-and-panel doors

1 Cut the door frame stiles (N) and rails (O) to size from ¾"-thick stock.

2 Cut or rout a ¼" groove ½" deep along one edge of each piece where shown on the Door drawing and accompanying detail.

3 Cut rabbets across the ends of the rails (O) to form ¼" tenons ½" long where shown on the Tenon detail accompanying the Door drawing.

4 Edge-join ¼"-thick stock to form the door panels (P). Trim the panels to finished size.

5 Finish-sand and then stain both panels (we used WOOD-KOTE gelled Danish Walnut stain).

6 Dry-clamp each door to check the fit. Then, glue and clamp each door, checking for square.

7 Mark one door R (for right) and the other L. Lay out and mark the hinge location lines and chisel the mortises in the door stiles (N) and the carcase stiles (E). Drill the pilot holes and attach the hinges to check the fit of the doors in the openings. Adjust if necessary and remove the hinges.

Time for the three drawers

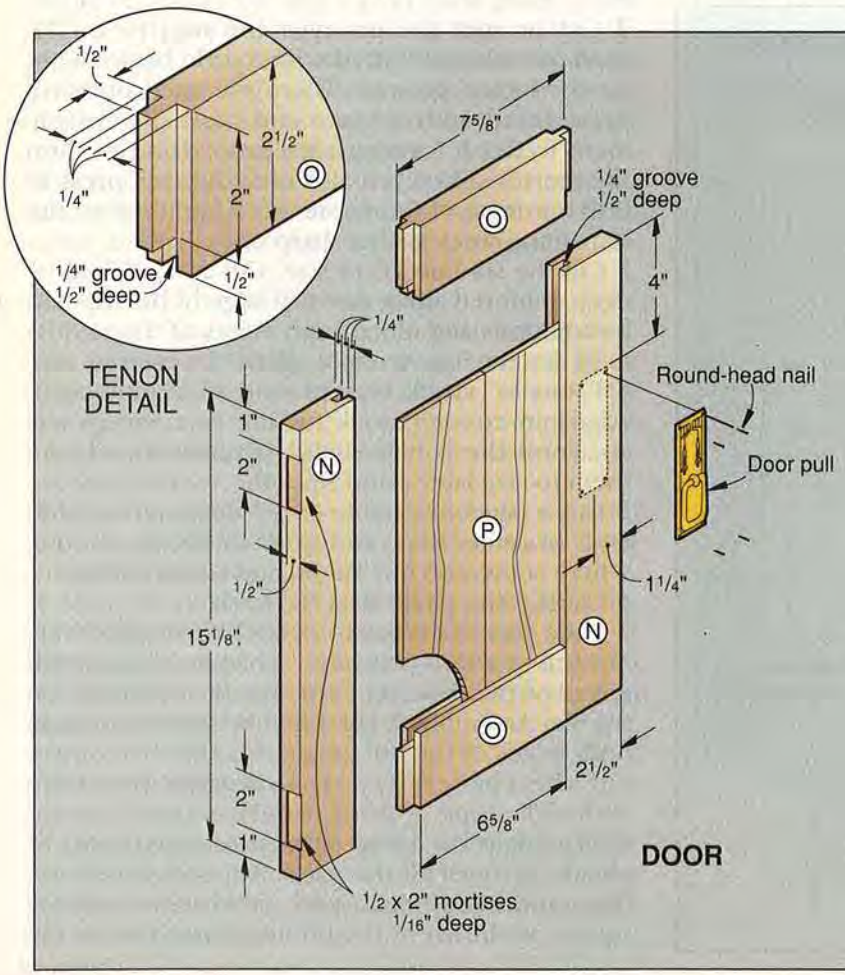
1 Cut the drawer fronts (Q) to size from ¾"-thick stock. Then, from ½" stock, rip and crosscut the drawer sides (R), and backs (S) to the sizes listed in the Bill of Materials.

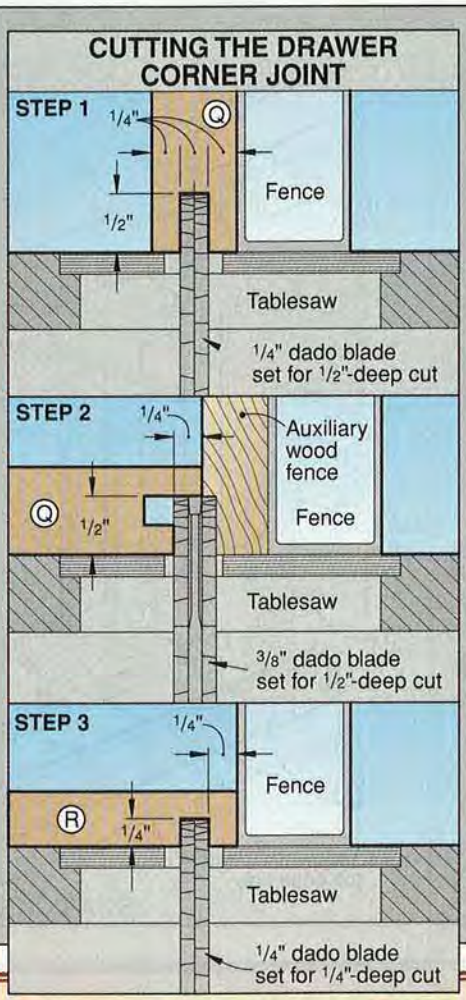
2 Follow steps 1 and 2 on the three-step drawing *below* to machine the ends of the drawer fronts. Then, follow Step 3 on the drawing to machine the mating end on the drawer sides.

3 Cut the remaining dadoes and grooves in the drawer fronts and sides where dimensioned on the Drawer drawing.

4 From ¼" oak plywood, cut the drawer bottoms (T) to size.

5 Temporarily attach the carcase back (C) to the carcase. Then, fit each drawer together (no glue) to check the fit on the glides (F) and against the back of the cabinet. Note that the cabinet back (C) provides the stop for the drawers. Adjust if necessary, and glue and clamp each drawer, checking for





square. Note that the back edge of the drawer bottoms are nailed to the bottom edge of the drawer backs (S).

Build the shelves and assemble the components

1 Cut the shelves (U) and front banding strips (V) to size. Make sure to cut the banding strips to the same thickness as the shelves.

2 Glue and clamp the banding strips to the front of the shelves with the ends and surfaces flush.

3 Cut the spacers (W) to size and glue them to the inside face of the rails (I). See the Exploded View and accompanying Screw-Hole detail for reference.

4 Finish-sand, stain, and apply finish to the carcase, end-panel assemblies, doors, drawers, and shelves. (We used Minwax fast-drying polyurethane.) Even though they're not exposed, seal the inside face of the panels (J) and the bottom side of the top (G). Sealing both sides of these panels, will help prevent warping later.

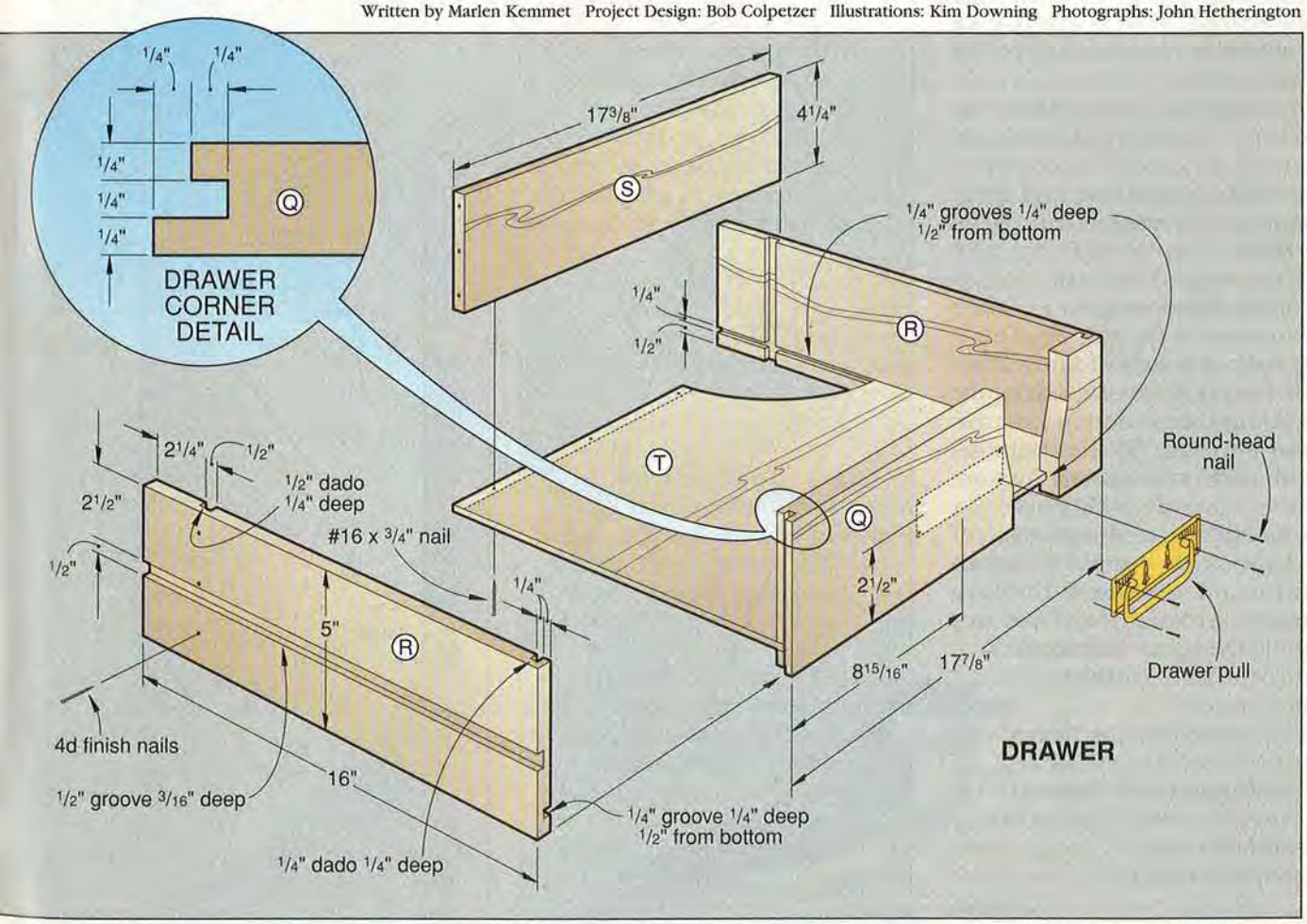
5 Set the carcase upside down on your workbench. Clamp the end-panels to the ends of the carcase so the back edge of the back legs (H) protrude ⅛" beyond the back edge of the carcase back (C) where shown on the Screw Hole detail. Working from the inside of the cabinet, screw the end panels to the carcase. See the Spacer detail accompanying the Exploded View drawing for reference.

6 Attach the pulls to the doors and drawers. Attach the doors to the cabinet.

7 Set the carcase/end panel assembly right-side up, and position the top (G) on top of the carcase/end panel assembly with an even overhang on both ends and flush with the back edge of the rear legs (H). Drive four #10×1½" roundhead screws through the 3⁄16" holes along the back edge of the carcase top (A) and into the bottom side of the top (G). Drive roundhead screws with washers through the center of the six 3⁄16" slots in the carcase top into the bottom surface of the top (G). Tighten the screws in the slots, and then back them off about half a turn to allow the screws to move in the slots with the expansion and contraction of the solid-wood top.

8 Secure the catches to the dividers (B) 13⁄16" back from the front edge of the face frame. Now, attach the mating strike to the back side of each door.

Written by Marlen Kemmet Project Design: Bob Colpetzer Illustrations: Kim Downing Photographs: John Hetherington



HOUSING GUIDELINES FOR THE BIRDS

You'll find few things in life as pleasant as watching and listening to the activity of songbirds. From dawn to dusk they display boundless energy as they nest, feed, and raise their families. But today's cities and suburbs usually lack the large old trees that provide nesting cavities for the dozens of songbird species that require them.

Luckily, it is easy and fun to simulate these natural nesting spots with birdhouses designed specifically for songbirds, not pesty house sparrows and starlings. You can even give nature a hand by providing boxes for waterfowl. That's why we've included a nest box suited for wood ducks.

For advice and guidelines on proper home building, we turned to a pair of experts: Carrol L. Henderson and Dave Algren. Carrol, nongame wildlife supervisor for the Minnesota Department of Natural Resources in St. Paul, Minnesota, has compiled a decade of songbird knowledge for his book *Woodworking for Wildlife* (see ordering information on *page 72*). His pointers will guide you in construction. Dave, a woodworking hobbyist from Stillwater, Minnesota, lent a hand with the plans shown here and on the following pages. A Northwest Airlines pilot, Dave has handcrafted more than 26,000 birdhouses!

If you follow the dozen guidelines listed here, you'll guarantee yourself some of nature's finest entertainment.

Happy building!

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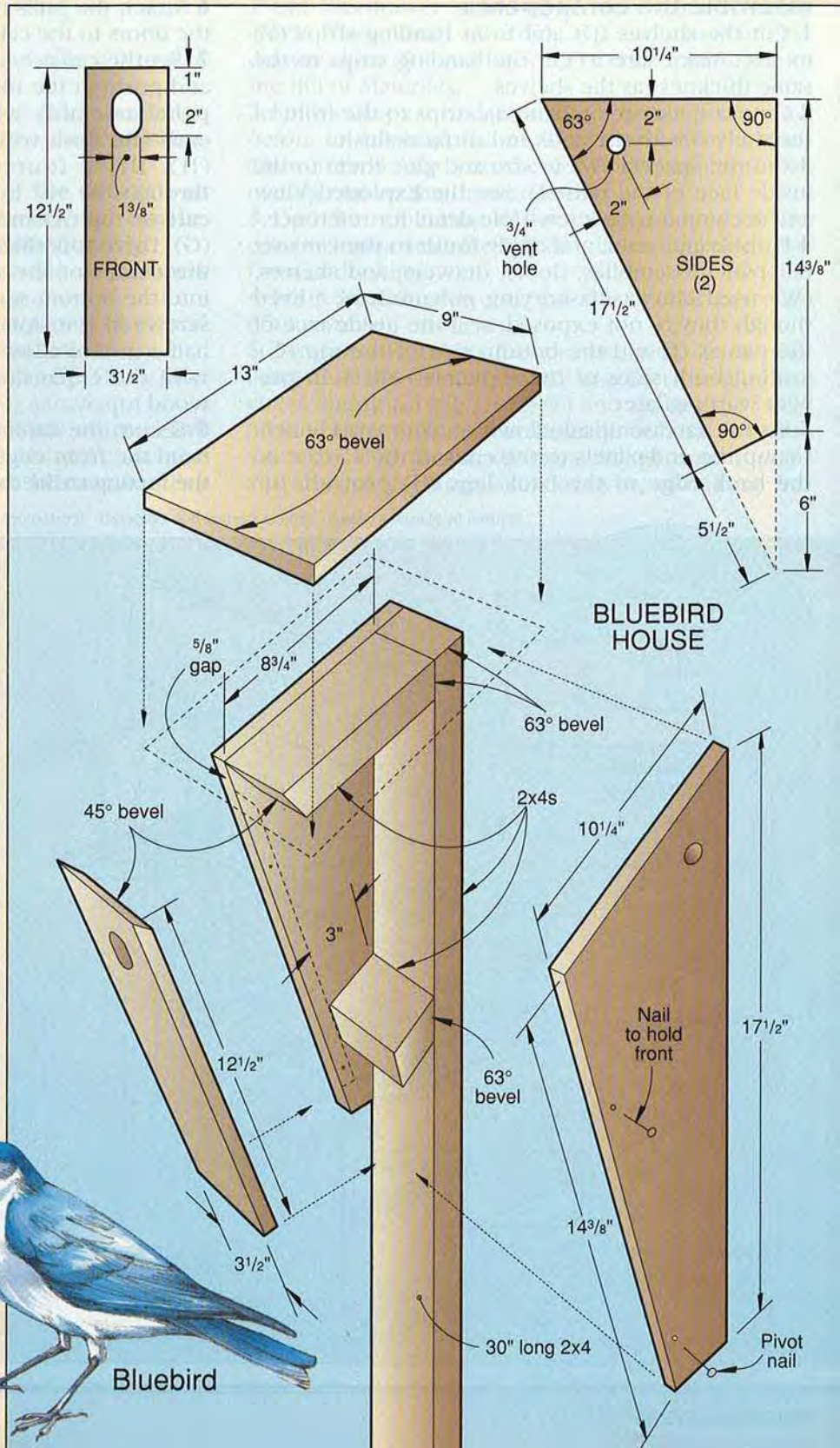

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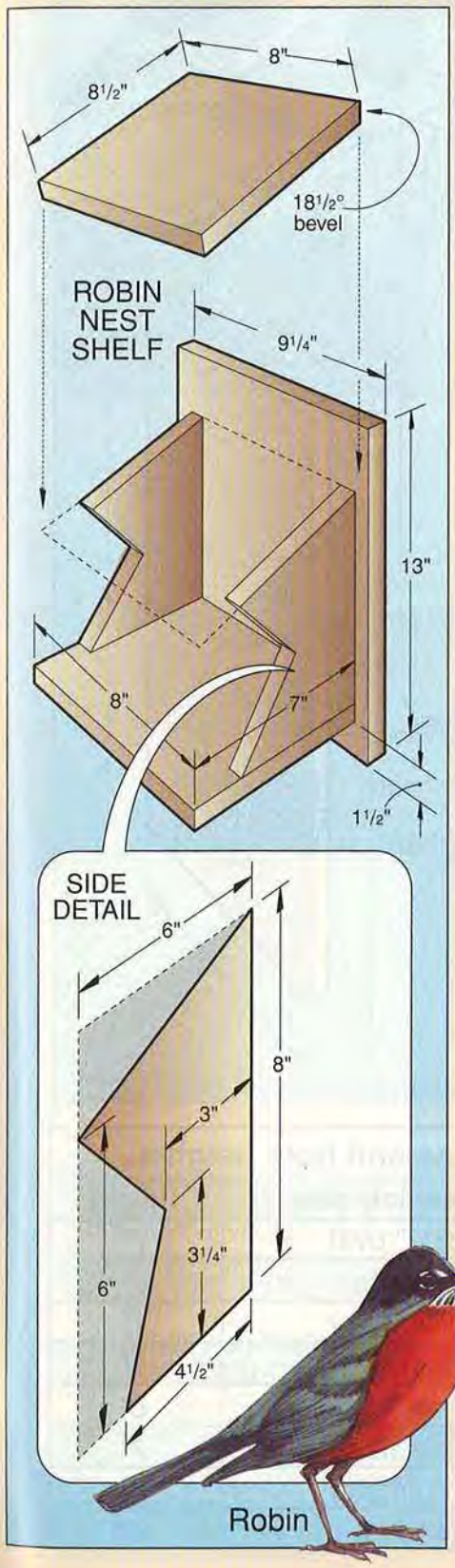
There's probably no better project to introduce a child to woodworking than a birdhouse. And to get ready for the songbirds' spring house hunt, now's the time to start.



12 IMPORTANT DO'S AND DONT'S

1 Don't build a house just for "birds." Build houses, nesting boxes, and other structures with specific types of birds in mind because each species has different size and entrance-hole requirements. See the chart on *page 72* for suggested dimensions and allowable entrance-hole sizes for songbird species. (A hole cut to the correct size keeps unwanted birds out. For instance, sparrows will enter holes 1¼" and larger.) Drill all holes—entrance and ventilation—at a slight upward angle to prevent rain from blowing in.

2 Wood is the preferred material for birdhouses. Metal does not provide heat insulation. But use only pine, cedar, redwood, or cypress—not treated wood or plywood—for functional birdhouses.

3 Assemble cedar and redwood birdhouses with galvanized screws or concrete-coated or ring-shank nails. If you don't, the joints will eventually loosen. For pine houses, use standard fasteners.

4 Always build the birdhouse so that the sides enclose the floor. This keeps rain from seeping into the side-wall/floor joint. To slow deterioration of the floor, recess it ¼".

5 Make the front edge of the birdhouse roof overhang at least 2". The overhang protects the entrance hole from rain and keeps predators from reaching in from above.

6 So that you can clean out birdhouses semi-annually (before and after nesting season), always build them with a hinged side or roof. Use rust-proof hinges and either screw closure or a pair of roofing nails and wire to discourage raiding by raccoons.

7 Drill at least four ⅜"-diameter drain holes in the bottom of a house (except on some special designs for bluebirds and wood duck nest boxes). Drain holes allow rain and condensation to escape. Clear them every time you clean the house.

8 For ventilation in all birdhouses (except duck boxes), drill at least two ⅝" holes near the top on both sides. Wood provides great insulation, but interiors can overheat.

9 Never put a perch on a birdhouse. Perches encourage sparrows and European starlings, which compete with—and often kill—songbirds.

10 Do not paint, stain, or treat with preservative the inside of a birdhouse. You may coat the outside back of a birdhouse (the most prone to rot) with preservative, or paint the entire exterior.

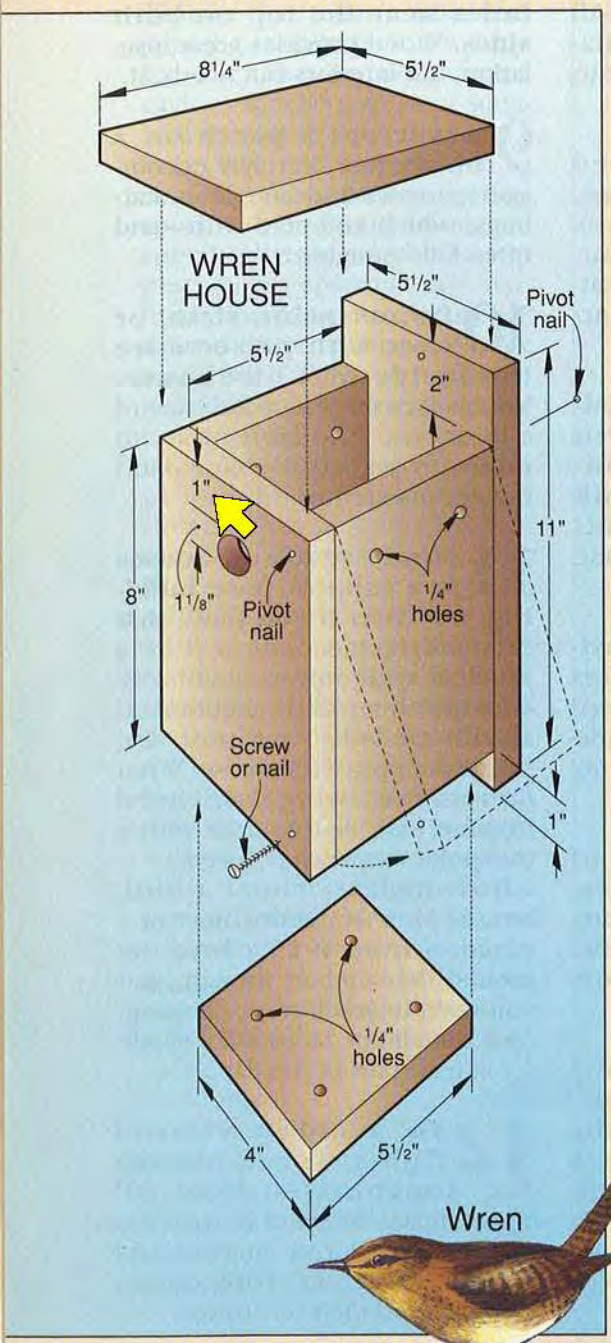
11 Firmly attach all houses to a support post, building, or tree. If you think that cats and/or raccoons will be a problem with a post mount, discourage them with sheet-metal shields tacked to the post. Or, smear the post with grease. Wren houses can swing suspended from an eave or tree limb with a two-point suspension system.

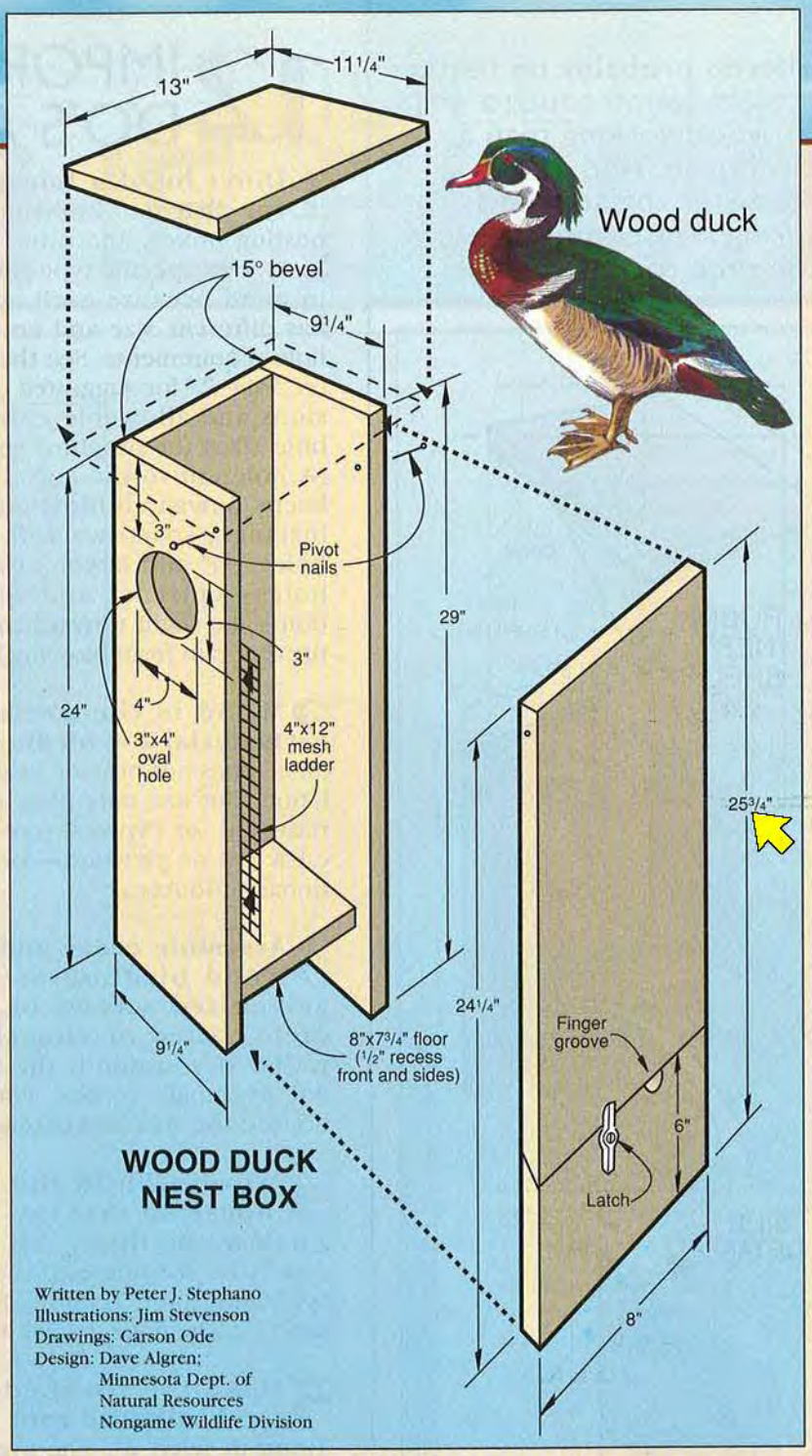
How high to mount a birdhouse? Most songbirds nest in a range of from 4-15' above the ground. Remember, though, that you need to reach it for cleaning. And remember to provide shade for at least part of the day.

12 To avoid territorial fights, space houses for songbirds at least 20' apart. Space bluebird houses 100 yards apart. Purple martins and wildfowl, such as wood ducks, don't defend their territories.

FOR THE BIRDS

For more information on birds, birdhouses, and nesting boxes, order a copy of *Woodworking for Wildlife,* and for complete information on bird feeding, see *Wild About Birds, the DNR Bird Feeder Guide*, both by Carrol L. Henderson and published by Minnesota's Bookstore, 1992, 1995. The books cost $10.95 each plus $2 postage, from Minnesota's Bookstore, 117 University Ave., St. Paul, MN 55155 or telephone 800/657-3757.





Written by Peter J. Stephano
Illustrations: Jim Stevenson
Drawings: Carson Ode
Design: Dave Algren;
Minnesota Dept. of Natural Resources
Nongame Wildlife Division

Entrance-hole sizes and hole heights		
Bird	**Entrance-hole size**	**Height**
Bluebird	1⅜×2¼" oval	7"
Wren	1" diameter	7"
Chickadee	1⅛" diameter	7"
House finch	2" diameter	4"
Nuthatch	1¼" diameter	6"
Warbler	1¼" diameter	7"
Titmouse	1¼" diameter	6"
Wood duck	3×4" oval	18"

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L18

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City/State_____ Zip____

Phone ( )_____

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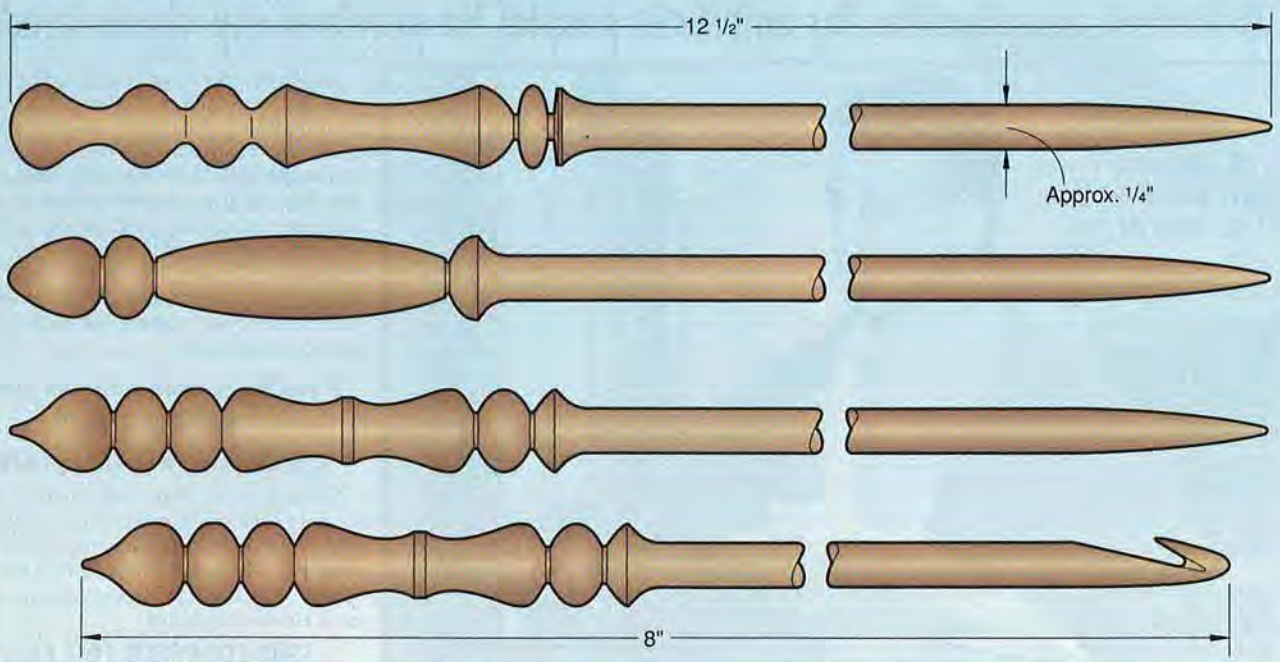
TURNED KNITTING NEEDLES

Continued from page 41

FULL-SIZED PATTERNS



if you can plug it in...we've got it!

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B4050 New! Inline Jig Saw 113
3283DVS Random Orbit Sander 91
1194VSR 1/2" Hammer Drill 139
1347A 4 1/2" Grinder 88

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2037 Drywall Screwgun 98
2037W Drywall gun w/50ft cord 119
2054 HD Screwgun 158
2670 1/2" Impact Wrench 149
2721 1.5 hp Router 1/2" collet 148
3105 Reciprocating Saw 148
3339 3hp VS Plunge Router 268
4076 7" Wildcat Grinder 165

DELTA
37-070 $248
6" Table Top Jointer
11-950 8" bench Drill Press $ 143
14-650 Hollow Mortse Chisler 283
22-540 12" planer 395
28-180 10" band saw 164
31-050 1" belt sander 77
31-080 1" Belt 5" Disc Sander 93
31-340 1" Belt 8" Disc Sander 203
31-460 4" Belt 6" Disc Sander 128
32-100 Plate Joiner 258
36-040 8" Compound Miter 154
36-090 Sidekick 10" Miter Saw 218
36-220 10" Compound Miter 228
40-150 15" Scroll Saw 115
40-560 16" Scroll Saw 177
40-640 20" Scroll Saw 294
35-617 10"x50T Carbide Bld 34
35-677 14"x108T Carbide Bld 75

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NEW! LS1211 12" Compound Miter Saw $799
2414 14" Cutoff Saw 217
3612BRA Plunge Router 167
BO4510 Square Pad Sander 49
BO4530 Round Pad Sander 55
BO5000 Random Orbit Sander 63
LS1030 10" Miter Saw 189
N1900B 3" Planer Kit 129

9.6 V "Black" Battery 24.50
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Grit	4 1/2" rol	10 yards pieces	'GOLD'C weightdiscs 6" round	5"round
60	N/A	100 pc	19.95	15.95
80	10.95	100 pc	18.95	13.95
100	9.85	100 pc	17.95	12.95
120	9.85	100 pc	17.95	12.95
150	9.85	100 pc	17.95	12.95
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Kit w/case & paper $188
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T50 50" Commercial Fence $ 297
HS52 50" Home Shop 237
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AEG
STSE380 Jig Saw 59
VS280 1/2 sheet sander 39

RYOBI
OSS450 Spindle Sander $169
AP10 10" Planer 369
AP10 Replacement Blades 24.95
BS900 NEW! 9" Band Saw 173
BT3000 Table Saw 529
DS1000 Detail Sander 39
JP155 6" Planer 299
JM100K Biscuit Jointer 209
QS1000 Quick Stand 42
R50K Trimmer 2 base Special 99
R70K Trimmer 2 base Special 99
RA202 8" Radial Arm Saw 388
RE600 3hp Plunge Router 219
RJ100VK Reciprosaw 99
RS112 Random Orbit Sander 54
RS115 HD Random Orbit Sander 73
S550 Finish Sander 53
SC160 Scroll Saw 134
TR30U Laminate Trimmer 85
TS251 10" Miter Saw 169
TS254 10" Miter Saw 197
TS260 10" Comp. Miter Saw 238
TS380 15" Miter Saw 365

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NAIL GUNS
241SK 18 G 3/8-1-1/2" Kit $98
EZ1 shoots pins & staples 98
250SK 18 G 3/4- 2" Kit 164
350K 16G 3/4- 2" Kit 198
565T 1- 2-1/2" Finish Gun 204
626SK 1/4" Crown 1" Stapler Kit 104
8290 6d-16d Framing Nailer 318

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AM39HC4V 3/4 HP- 2 tank 288
AM78HC2 11/2 HP-1 tank 279
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New! Oilless 11/2 HP-2 tank 299

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5 pc Router Bit Cabinetset $158
94-100
91-100 13 pc 1/2" Shank Bit Set 189
92-100 26 pc 1/4" Shank Bit Set 299
LU85M010 10" 80T Finish 58
LU84M011 10" 50T Combo 39
LU72M010 10" 24T Rip 36
LU85M015 15" 108T Finish 98
LU82M010 10" 60T Chipboard 45
LU89M010 10" 72T Aluminium 57
LU92M010 10" 60T Corian® 58
LU98M010 10" 80T Laminates 66
LU72M010 10" 40T ATB 39
LU87M010 10" 24T Thin Kerf 39
LU73M010 10" 60T Crosscut 44

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SL224 2' economy Level $ 54
PR24S 2' Pro Level w/case 88
PR48S 4' Pro Level w/case 105

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LEVELS - Hand holes. Two vertical vials. Two milled faces. Yellow coat.
2464 24" $ 39
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Economy Style 24" 2434 25
Economy Style 48" 2437 39
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7pc Forstner Bit Set your choice
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0407-1 Cordless Drill Kit-2batt 172
0564-1 Cordless Drain Cleaner 192
3300-1 Rt Angle Drill 189
5192 Die Grinder 174
5362-1 1" Hawk Hammer 318
5365-1 1" Hawk Hammer Kit 348
5369-1 3/4" D-handle Falcon Kit 238
5371-1 1/2" Hammer Drill 183
5375-1 1/2" Hammer Drill Kit 178
5392-1 3/8" Hammer Drill 126
6140 4 1/2" Grinder 98
6142 4 1/2" Grinder Kit 123
6175 14" Chop Saw 278
6460 10" Circular Saw 258
6490 10" Miter Saw 274
6491 10" Miter Saw w/80t Blade 288
6492 10" Miter Saw deluxe kit 335
6528 VS Super Sawzall 172
6539-1 Inline Screwdriver 74
6546-1 2 spd Inline Screwdriver 81
6767-1 Screwdriver Kit 134
8980 Heat Gun Kit 91

6535 Dual range VS Sawzall $115

SENCO
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EY6100EQK NEW! PREDATOR 12 V CORDLESS DRILL 15Minute Charge $197
EY6100CRKW PREDATOR 1 Hour Charge w/2 Batteries 187
EY571B 9.6V Cordless Dril 119

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IT'S BACK! IT'S NEW! IT'S MADE IN THE USA!
C8FB2 COMPOUND SLIDE SAW $579
60 Tooth Carbide Blade 39.95
C10FA 10" Miter Saw 269
NR83A Framing Nailer 379
TR6 Laminate Trimmer 91

DEWALT
DW682K Biscuit Joiner $224
DW106 3/8" Keyless Drill 73
DW610 1-1/2 Hp Router 148
DW704 12" Miter Saw 324
DW705 12" Compound 353

TRU-GRIP

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50C	$ 29.50	BB50	$ 45.95
36C	26.50	BB36	37.95
24C	22.50	BB18	31.95

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The world best feet-inch-metric-fraction calculator. Solve rafters, hips,valleys, stairs
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for joining faceframes, butt joints and other pocket hole applications
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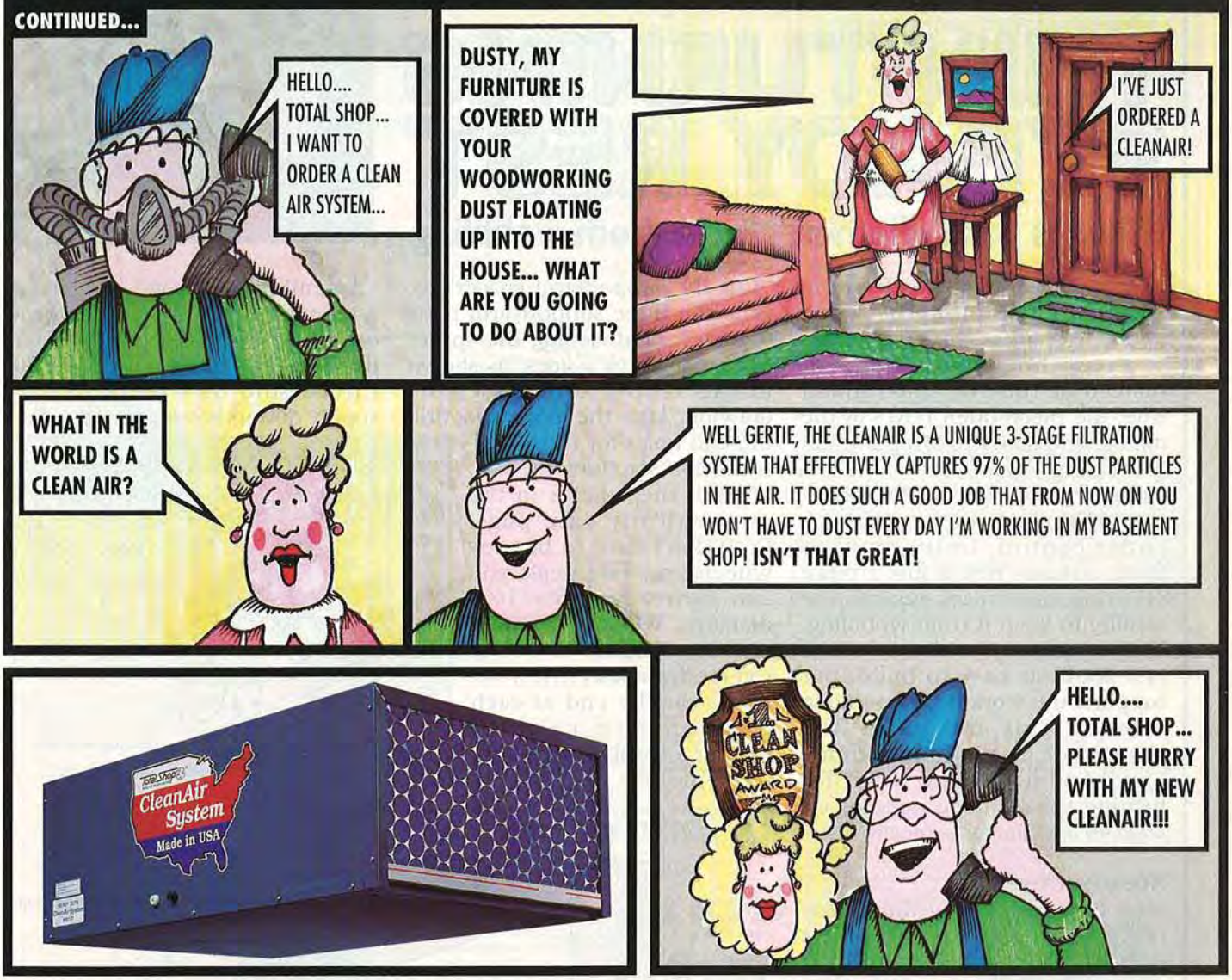
Circle No. 5

The Adventures of Dusty Pyles


CONTINUED...
HELLO.... TOTAL SHOP... I WANT TO ORDER A CLEAN AIR SYSTEM...
DUSTY, MY FURNITURE IS COVERED WITH YOUR WOODWORKING DUST FLOATING UP INTO THE HOUSE... WHAT ARE YOU GOING TO DO ABOUT IT?
I'VE JUST ORDERED A CLEANAIR!
WHAT IN THE WORLD IS A CLEAN AIR?
WELL GERTIE, THE CLEANAIR IS A UNIQUE 3-STAGE FILTRATION SYSTEM THAT EFFECTIVELY CAPTURES 97% OF THE DUST PARTICLES IN THE AIR. IT DOES SUCH A GOOD JOB THAT FROM NOW ON YOU WON'T HAVE TO DUST EVERY DAY I'M WORKING IN MY BASEMENT SHOP! ISN'T THAT GREAT!
CleanAir System
Made in USA
CLEAN SHOP AWARD
HELLO.... TOTAL SHOP... PLEASE HURRY WITH MY NEW CLEANAIR!!!

And here are just a few more advantages the *CleanAir System* has over the competition...

- Needs no outside venting
- Effectively cleans the air in an area up to 4000 cubic feet
- Totally quiet operation
- Has no effect on existing room temperature
- Runs on standard house current
- Compact size (25" x 13" x 40") fits almost anywhere
- Heavy gauge steel cabinet with mounting holes
- Contains approximately 18 square feet of filter material
- Easy filter replacement
- Also available in heavy duty model
- 30 day money back guarantee
- One year warranty on all parts
- Built in the USA with a 5 year track record of total customer satisfaction!

Why continue fighting the never ending battle with dust? Order NOW and receive absolutely FREE our Extended Lifetime Warranty ($29.95 value!)

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490 CFM order # 90177
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NOW $309
$20 shipping

***Filter Replacement Kit* • order # 90176 • $29.95**

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CITY/STATE_____
ZIP_____ PHONE_____
☐ PLEASE SEND MORE INFORMATION
☐ I WANT TO ORDER #_____
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CARD #_____ EXP. DATE____

Total Shop
WORLD OF WOODWORKING
DEPT. #3
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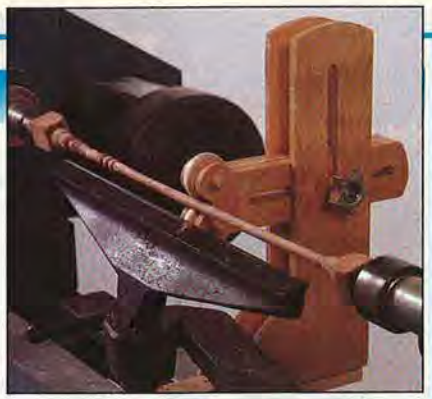
Circle No. 940

THIN-TURNING STEADY REST

It keeps small-diameter work from wobbling



With a long, slender turning spinning between centers on your lathe, strange things can happen. Instead of running smooth and true, the piece often bows in the middle and starts to whip around like a jump rope.

That's when you need a steady rest to help bring the turning back under control. In its simplest form, a steady rest is just a piece of wood that bears against the turning to keep it from wobbling. We've come up with one that's just about as easy to build, but supports the workpiece on rolling wheels. This minimizes the chances of marring the turning. You'll find it's just the ticket for turning the knitting needles on *page 40* and similar projects.

Steady, now

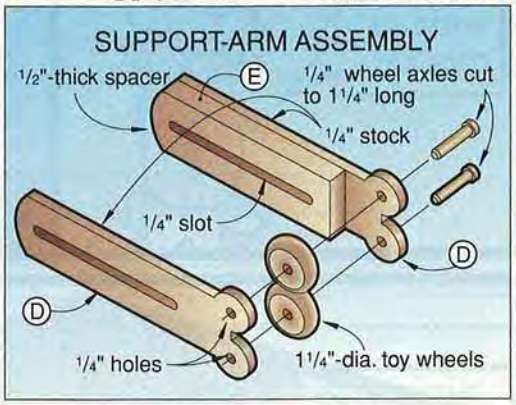
Start by constructing the steady rest's base, parts A and B. The ones shown in the Exploded View drawing *right* fit a Jet JWL 1236 lathe. To construct a base to fit your machine, make part A long enough to span the lathe bed and extend about 6" beyond the centerline at the back. Part B must fit beneath the bed to clamp the fixture in position.

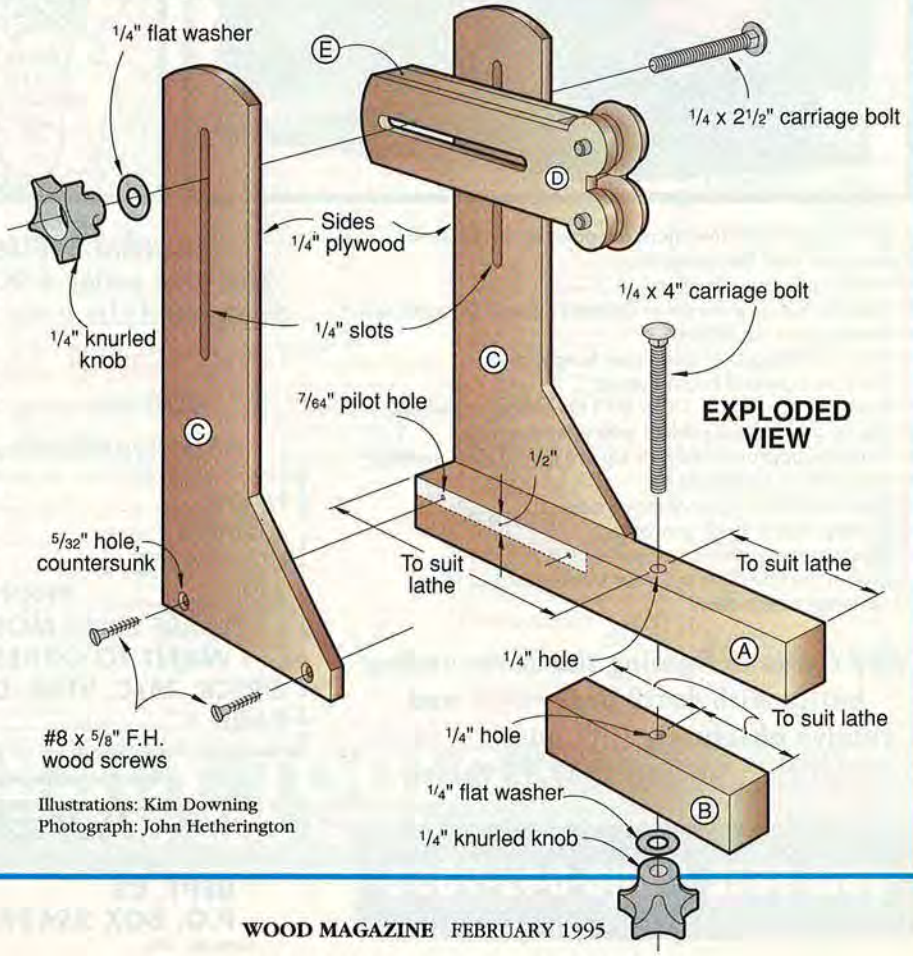
Using the full-sized patterns in the *WOOD PATTERNS™* in the center of the magazine, cut two stand sides (C) and two support-arm sides (D) from ¼" plywood. Where shown, drill the axle holes in parts D and the holes for the ends of the adjustment slots in parts C. Scrollsaw the adjustment slots in parts C only. (We stack-cut the parts on a scrollsaw, then drilled the holes and cut the slots before separating the pieces.)

Cut the support-arm spacer (E). Glue the three support arm parts together, sandwiching the spacer between the two sides, as shown in the Support-Arm Assembly drawing. After the glue dries, drill the end holes for the adjustment slot. Scrollsaw the slot.

Install the wheels in the arm with toy axle pegs. (You don't have to buy toy wheels and axle pegs; you can turn your own 1¼"-diameter wheels 7/16" thick and use lengths of dowel rod for the axles.) Drill a 1/16" hole near the end of each peg, then insert a piece of wire or a small cotter pin to retain the axle.

Assemble as shown. We used wingnuts salvaged from a worn-out portable circular saw for our jig. Similar knobs with a ¼"-20 thread sold by woodworking-supply dealers work great, too.





Illustrations: Kim Downing
Photograph: John Hetherington

THE CUT IS EVERYTHING!

FREE - $45 IN SHARPENING COUPONS WITH EACH BLADE OR DADO SET

Buy any blade or Dado — or Buy Our Best Seller 10" x 40T for only $119 (list $156, save $37!) — and also receive $45 in sharpening discount coupons. (Total Savings $82 OR MORE!!)

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NO-CHIP BLADES & DADO SETS for MELAMINE and OAK/BIRCH VENEER • VERTICAL & HORIZONTAL PANEL SCORING SETS • RADIAL & CHOP SAWS

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GOOD ON ALL FORREST OR OTHER MAKES OF CARBIDE BLADES OR DADO SETS. Total Savings $82 or more! Nine $5 sharpening coupons supplied with blade or dado. Offer good through February 28,1995. Must mention WOOD mag. to receive coupons and extra bonus.

WOODWORKER II	List	SALE
14" x 40T x 1"	~~$215~~	$149
14" x 30T x 1"	~~195~~	139
12" x 40T x 1"	~~183~~	129
12" x 30T x 1"	~~162~~	119
10" x 40T x 1/8" or 3/32"	~~156~~	119
30T 1/8" or 3/32"	~~135~~	99
9" x 40T	~~146~~	109
30T	~~125~~	99
*8-1/4" x 40T 3/32"	~~136~~	99
8" x 40T 3/32"	~~136~~	99
30T 3/32"	~~115~~	89
7-1/4" x 30T 3/32"	~~112~~	69
**NEW 6" x 40T 3/32"	~~136~~	89

***NEW For Sears & Makita Table Saws **For Saw Boss**

5/8" holes, boring thru 1 1/4" add $7.50
Larger at Time Basis Shipping $4.50

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IN NEW JERSEY (201) 473-5236. BUS. OPEN ACCT.

CHECKS OR CREDIT CARD

Outperformed 36 other premium blades.

Wood Magazine test, Sept., '93, pg. 45.

Dear Sirs,

Never before had I seen your blade in action, but I wouldn't have believed it if I had not seen it! I was so impressed with the glass-like cut the Woodworker II blade made on various wood types that I went to "Woodworking Unlimited" the next day and bought your dado set!!

David Sharp
Sugar Land, Texas

Dear Sir,

When I first saw your ads for your saw blades, I thought that if one quarter of what you were claiming was true, the blade would be worth buying. Now having bought and used one, I have found all of your outrageous claims to be justified - it's a terrific tool.

Peter Lauritzen - Carpentry
Tesuque, NM

P.S. I hope to see these available in 7 1/4" size in the future, for skilsaws

"They are right now, Peter."
Jim Forrest

Gentlemen,

I have used many different blades during my forty plus years of working. There is absolutely no comparison to any other blades on the market and your WW I & II blades.

Kenneth L. Salisbury
Huntsville, AL

FOR BETTER CUTS on all brands of blades, use our large 1/8" DAMPENERS-STIFFENERS against one side.

- Parallel and flat to .001"
- Stop vibration, flutter, CUTTING NOISE and blade ring
- Tryable and returnable for full cash refund

4"	$21
5"	24
6"	25

FULL RANGE OF OTHER INDUSTRIAL SIZES

The One Blade That Leaves A Smooth-As-Sanded Surface!!!

(From Another Customer)

In closing I would like to add that the Woodworker II blade is by far the finest saw blade that I have ever used. I also have the Forrest dado set which is without a doubt, the king of all dado sets. I work exclusively with red oak and oak veneer plywood and the dado set performs splinter-free cuts as advertised.

It is a pleasure to purchase a product that does what it is advertised to do. Thanks for making such a fine product.

Dennis R. Schule, Owatonna, MN

UPGRADE YOUR CHOP AND SLIDING MITER SAWS WITH OUR CHOPMASTER

New specs • 5° Neg. Pts. & a flat, runout less than .002" for perfect, tight, smooth, splinter-free miter joints.

NEW AVAILABLE SIZES

		List	SALE
Delta Sidekick 6-1/2"	6-1/2" x 40T x 5/8"	$149	$ 89
Sears 8-1/4" & Delta	8-1/4" x 60T x 5/8"	170	99
Hitachi 8-1/2" DeWalt 8-1/2" & Ryobi	8-1/2" x 60T x 5/8"	179	109
Delta	9" x 80T x 5/8"	204	119
Ryobi-Makita & all	10" x 80T x 5/8"	207	129
DeWalt, Makita, B&D & Hitachi	12" x 80T x 1"	229	139
Ryobi-Makita	14" x 100T x 1"	266	179
Hitachi	15" x 100T x 1"	277	189

For good general purpose cuts use Woodworker II 30T & 40T or Woodworker I

Use small stiffener where possible

QUIET! ***Also help all your other blades to cut better.*** Use our 1/8" DAMPENER STIFFENERS, against one side

4" - $21
5" - $24
6" - $25

Tryable and RETURNABLE. CUTS NOISE to 1/2 or 1/4. Stops vibration, flutter, cutting noise and blade ring. Parallel and flat to .001 • 7" and larger available.

5/8" holes std. Boring up to 1-1/4" $7.50 extra. Others available. Add $2.50 Shipping.

REDUCE NOISE 50%-75%

WOODWORKER I - For TABLE and RADIAL SAW

this trim and crosscut ALL PURPOSE blade gives scratch free POLISHED cuts on all materials RIP or CROSSCUT up to 2".

- All 60T and 3/32" *THIN* kerf 30° ATB and 5° face hook on 10" dia and under. 12" and 14" are 20° ATB 1/8" K.
- DOUBLE HARDER and 40% STRONGER carbide.
- THIN KERF:

Saves 1/3 wood loss on each cut, radial or table. Feeds easy when used for moderate rip and crosscut on table saw. **Reduces "JUMP IN"** greatly for better "PULL CONTROL". Practically **eliminates bottom splinter** on RADIAL-CROSS CUT.

- Totally stops ALL bottom and top splinter on ply veneers in push-cut mode on RADIAL.
- Our STIFFENER STRONGLY RECOMMENDED AGAINST outside of blade only for best cuts.

Made and serviced in USA for your benefit.

	List	SALE
14" x 60T x 1" 1/8"	$224	$159
12" x 60T x 1" or 5/8" 1/8" K	198	139
10" x 60T x 5/8" 3/32" K	162	129
9" x 60T x 5/8" 3/32" K	156	119
8" x 60T x 5/8" 3/32" K	150	109
New 8-1/4" x 60T x 5/8" 3/32" K	150	109
New 7-1/4" x 60T x 5/8" 3/32" K	150	109

RYOBI RA200 • TS200 SEARS • MAKITA 500B NBA • HITACHI PSM8 • PORTER CABLE 368-1

NEW DADO KING DELUXE *DADO SET* cuts *ALL* 1/8 - 29/32 **flat bottom** grooves WITH or CROSSGRAIN all woods. OAK, BIRCH, VENEER PLYS, and MELAMINE. NO SPLINTERING due to unique 4T Neg. Face fillers and 24T outside saws. ***OUT PERFORMS 29 + 32 OTHER DADO SETS*** *WOOD Mag.*, Oct. 91, pg. 62,63 "Best Value"

Boring up to 1-1/4" $25 per set **SALE! 10% OFF $5.50 Per Set Shipping** **NEW 3/32 Chipper & Shims incl.**

"No tearout on all five woods tested." *-Fine Woodworking July/Aug, 1991*

NEW 6" D. 5/8" Bore • List $299/**SALE $269** • 10" D. 5/8" & 1" Bore • List $389/**SALE $349**
8" D. 5/8" Bore • List $321/**SALE $289** • NEW 12" D. 1" Bore • List $499/**SALE $449**

DURALINE Hi-AT For TABLE & RADIAL SAW

(very good on chop saw too!) STOP SPLINTERING those SPLINTERY OAKS, HARDWOOD VENEERS and *thin* 2 SIDE LAMINATES ON PARTICLE BOARD.

FOR FASTER FEED RATES AND MORE ABSOLUTE SPLINTER CONTROL.

DURALINE Hi-AT

Note: *Fine Woodworking Editorial Nov./Dec. 1988 No. 73, pg. 65, S.N. recommends high alternating top bevel (ATB) thin kerfs and large blade stiffeners for smoothest cuts on RADIAL SAW, etc.*

Jim Forrest, President and designer microscoping cutting edge.

All 5/8" holes. Boring up to 1-1/4" $7.50 extra
Larger holes - time basis. Shipping $4.50

	LIST	SALE
7-1/4" x 60T 3/32"	$149	$129
8" x 80T 1/8" & 3/32"	202	$169
9" x 80T 1/8" & 3/32"	207	$179
10" x 80T 1/8" & 3/32"	207	$159
SPECIAL SALE10" ONLY $159		
12" x 80T x 1" 1/8"	212	$181
12" x 100T x 1" 1/8"	253	$215
14" x 80T x 1"	232	$197
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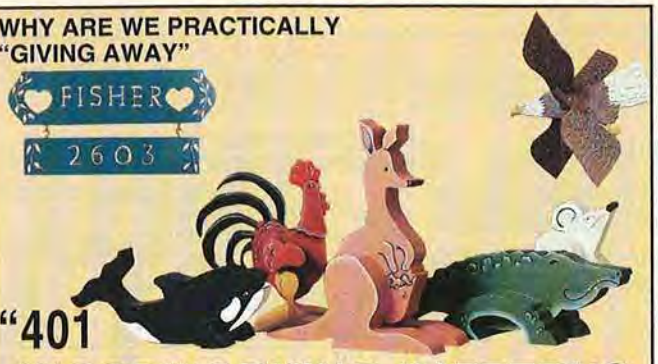

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M-WTCA members go about tool collecting seriously. They feel strongly about preserving as well as learning about old-time tools and the craftsmen who used them. Their association's purpose, though, gives a clue to the spirit in which they band together: "to accomplish this in a spirit of fun and fellowship." This group of folks enjoys sharing their discoveries about tools from the past.

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Though some members collect a broad variety of tools, many collectors narrow their focus to a specific type of tool, product, or tools from only a specific period or location. A member from Missouri, for example, collects only oil cans. And Stanley tools have always been popular.

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Information for members makes the rounds through the association's quarterly magazine, *The Gristmill*. Detailed articles discuss such subjects as how Colonial watermills were erected. Reprints of old hardware catalogs, advertisements, and articles give members more fodder for their collecting fires.

Annual membership is $20 for those in the U.S., $28 in Canada, and $35 in other countries. For more information on joining, write to William Rigler, Mid-West Tool Collectors Association, Dept. W, R.R. 2, Box 152, Wartrace, TN 37183.

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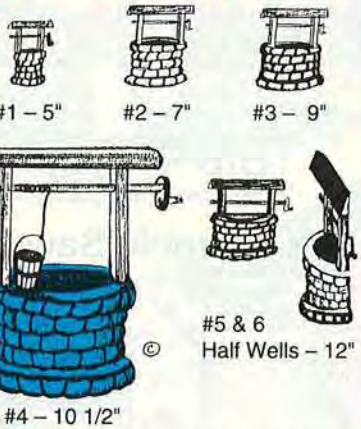

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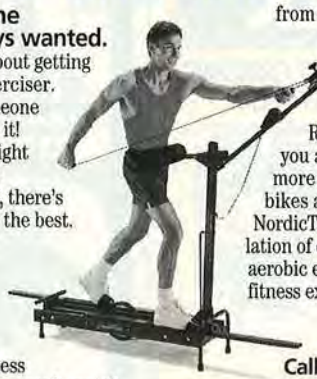

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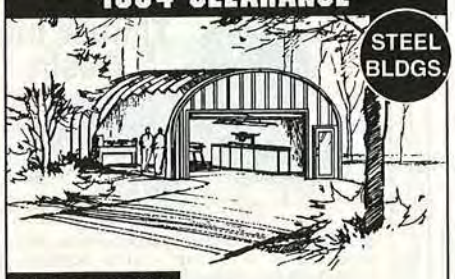

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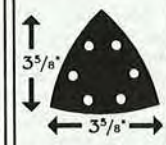

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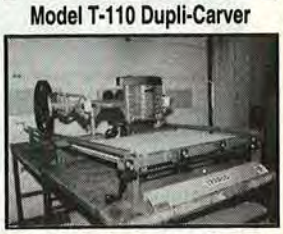
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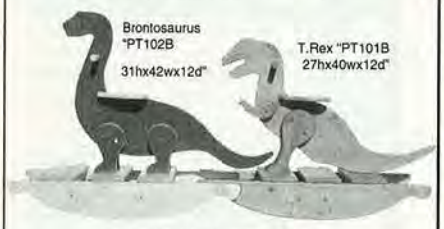

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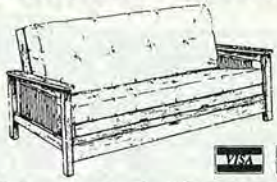

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WOODWORKER'S RESOURCE

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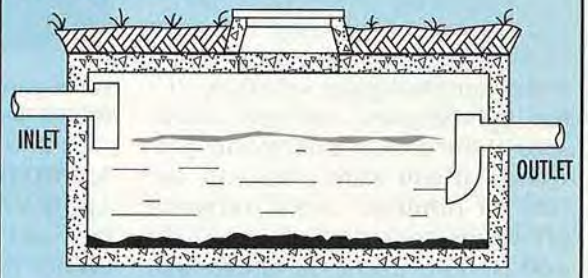

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Follow the five "Ps" when PAINTING PLYWOOD

For a glass-smooth paint job on plywood, sand carefully and follow with putty, primer, paint, and a top coat of polyurethane.

The next time you want a smooth paint job on plywood, just remember our five-step procedure: PREPARATION, PUTTY, PRIMER, PAINT, and POLYURETHANE. We used this technique to achieve a smooth, durable surface on the kids' table and chairs project, *page 46*. Here's how our foolproof strategy comes together.

1. PREPARATION

Start smart by choosing the right plywood. Birch-faced plywood makes an ideal paint substrate. It's flat, tight grained, and less expensive than other hardwood plywoods. If you want a smooth surface for furniture, avoid softwood plywoods such as fir-faced sheet goods. The grain on these will telegraph through your paint film as small but visible ripples.

Sanding is the second step in preparation. Use a sanding block and start with 100-grit sandpaper, go to 150-grit, and finish with 220-grit. To prevent splinters, round over exposed edges with a router bit or sandpaper.

2. PUTTY

Fill the voids in the edges of your plywood with wood putty. After the putty dries, sand the edges working through 100-, 150-, and 220-grits. As you are sanding, you may uncover a few smaller voids that didn't completely fill with putty. If so, refill these areas and re-sand the edge.

3. PRIME

Apply a coat of primer to the surface and the edges of your panel. Primer bonds tighter to the wood than an unprimed coat of paint and is less likely to peel or crack—thus destroying the top coat. A white primer coat also will dramatically display any overlooked dings, scratches, or voids. Refill these with putty, sand smooth, and spot-prime the area. After the primer dries, lightly sand the entire panel with 220-grit abrasive to knock down the little bumps caused by air bubbles and dust specks.

4. PAINT

Now, you can put on the color coat. On small projects, apply the paint with a brush. If you have a large panel, use a fine-nap roller for speed. Put on two coats and sand lightly with 220-grit sandpaper between coats. To avoid brush marks when using water-based paints, use a disposable foam brush or roller.

5. POLYURETHANE

On interior projects, top off your paint with two coats of polyurethane. This clear coating protects against abrasion and rough handling. To improve adhesion, sand your final paint coat with 220-grit abrasive before applying the polyurethane. Also, sand lightly between the coats of polyurethane. On your outdoor projects, skip the polyurethane step, and make sure that all the products you use—plywood, primer, putty, and paint—are rated for exterior use.

Photograph: John Hetherington

Do It Yourself Willow Furniture™
Step By Step Illustrated "How To" Guide

Written by Sandra Levarek
Published by Helios Enterprises Inc.

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About the Author & Book

Mother of three, Sandra Levarek discovered at home the beauty and rewards of making traditional willow furniture. She collected and documented the various techniques of willow making from woodworking artists across the country. Amazed by how challenging and rewarding it was to make willow furniture, she began to share her knowledge with fellow woodworkers:

"Be creative challenging your skills as you make willow furniture! Feel free to change and modify designs according to your needs and the equipment available to you. Challenge your woodworking talents!"

She compiled the only book available today teaching woodworkers how to make a complete line of willow furniture. *"Do It Yourself Willow Furniture™"* gives you step-by-step illustrated instructions. All projects emphasize natural design and materials: Planter Baskets, Child's Chair / Rocker, Tri-Shelf Plant Stand, Hanging Birdcage, Loveseats, Patio & Tea Tables, Lamps, Chair Swings, & more. Experience the art of willow furniture!

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WOOD ANECDOTE

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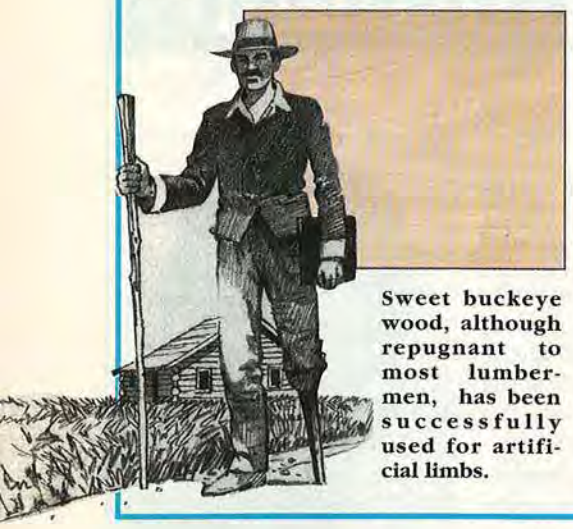
THE LOWLIEST HARDWOOD THERE IS

SWEET BUCKEYE



Sweet buckeye wood, although repugnant to most lumbermen, has been successfully used for artificial limbs.

Lumbermen have few nice words for the wood of the sweet buckeye (*Aesculus octandra*) that grows from Pennsylvania through the South and west to Oklahoma. That's because this light-colored, featureless hardwood that some call yellow buckeye ranks below softwoods in hardness. Besides being among the weakest of woods, sweet buckeye smells terrible when green and shrinks greatly in drying, losing 50 percent of its weight!

If those significant traits aren't bad enough, the fruits from which the tree derives its name (round and shiny brown, they resemble a deer's eye) have a poisonous reputation. Livestock and even children have developed nausea and dizziness from eating them.

On the other hand, even this lowliest of hardwoods has some historical merits. Bookbinders of old would mash the toxic buckeye fruits and make a paste to fasten pages together. The very poison intolerable to people and animals also drove insects away from their otherwise vulnerable books.

Then, too, sweet buckeye wood, although plain and weak, has proved useful even now for shipping crates and boxes because of its lightness. Nails also hold well in it. Surprisingly, this same lightness—combined with straight-grain and resistance to splitting—made it ideal for artificial limbs before man-made materials.

Despite buckeye's faults, George Washington, who loved trees, developed a fondness for it on a trip to West Virginia. He found a variety that in spring bore beautiful flowers, and went on to pay the sweet buckeye the highest tribute by gathering its seeds and planting them at Mount Vernon.

Illustration: Jim Stevenson

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Model	Description	List	Sale
23-700	Wet/Dry Grinder	234	155
23-680	6" Bench Grinder 1/4 HP	86	75
11-950	8" Drill Press	199	135
31-050	1" Belt sander 2.0 amp	104	75
31-460	4" Belt/Disc Sander	198	129
31-340	1" Belt/8" Disc Sander	268	204
40-560	16" 2 speed Scroll Saw	266	178
11-990	12" Bench Drill Press	276	195
11-090	32" Radial Bench Drill Press	399	305
43-505	1/2" Bench Router/Shaper	399	285
22-540	12" Bench Top Planer	Sale	389
36-220	10" Compound Mitre Saw	350	229
28-180	Bench Band Saw	232	158
28-190	NEW 12" Band Saw	465	389
40-640	20" Bench Scroll Saw	466	295
37-070	NEW 6" v/spd Bench Jointer	337	249
14-650	Hollow Chisel Mortiser	668	279
46-700	12" Wood Lathe	548	445
33-990	10" Radial Arm Saw	818	645
37-280	6" Motorized Jointer	488	389
50-179	3/4 HP 2 stage Dust Collector	483	345
33-055	8-1/4" Sawbuck comp w/legs	865	615
34-330	8-1/4" Table Saw 13 amp	343	245
32-100	Stationary Plate Jointer	645	255
36-040	8-1/4" Compound Mitre Saw	224	149
34-915	30" Unifence	385	229
34-897	50" Delta Unifence	525	289
36-755	10" Tilt Arbor Saw	1264	969
34-444	Contractors Table Saw	812	619
17-900	16-1/2" Floor Drill Press	462	399
33-060	"Sidekick" Miter Saw	510	375
37-190	NEW 6" Deluxe Jointer	554	479
36-275	NEW 8-1/4" Builders Saw	444	265
36-210	NEW 10" Compound Mitre Saw	438	255
36-070	NEW 10" Mitre Saw	284	169
36-630	NEW 10" Contractors Saw II	700	575
34-555	NEW Sliding Table	459	359

The following Delta Tools have Rebates !
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$50 Rebate

28-283	14" Band Saw w/enc. stand	910	745
28-283K	28-283 Saw w/28-843 rip fence	Sale	789
34-445	34-444 Saw w/30" Unifence	1200	775
34-445K	34-445 Saw w/34-914 table board		809

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22-661	13" Planer w/ 2HP motor	1513	1189
37-154	DJ15 6"Jointer w/3/4HP motor	1451	1165

MILWAUKEE TOOLS

6527	NEW Sawzall with case	320	172
6528	above Sawzall w/wired cord	316	172
0407-1	12V Drill w/kyls chuck & 2 batt		172
0395-1	9.6V cordless Drill with case	290	158
0224-1	3/8" Drill 4.5 amp magnum	227	124
0234-1	1/2" Drill 4.5A mag 0-850 rpm	237	128
0244-1	1/2" Drill 4.5A mag 0-600 rpm	237	128
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	198	109
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	195	109
0375-1	3/8" close quarter Drill	237	129
0379-1	1/2" close quarter Drill	268	152
6546-1	cdls Scrwdvr 200 & 400 rpm	141	84
5399	1/2" D-hdle Hammer Drill Kit	332	194
6507	Original SawZall with case	264	144
8977	Variable temp. Heat Gun	131	79
5397-1	3.8" var. spd Hammer Drill Kit	255	142
5371-1	1/2" var. spd Hammer Drill Kit	340	188
3107-1	1/2" v/spd right angle Drill Kit	399	219
6754-1	Drywall Gun 0-4000 5.4 amp	196	114
3300-1	1/2" var. spd right angle Drill	356	194
5680	Router 2 HP - 12 amp	362	195
0235-1	1/2" Drill w/keyless chuck	237	128
6142	4-1/2" Grinder w/cse & access.	208	124
6749-1	Drywall Gun 0-2500 5.4 amp	218	128
6365	7-1/4" Circular Saw 13 amp	218	122
6366	6365 w/fence & carbide blade	228	129
6368	6365 w/fnce,carb. bide,& cse	249	139
6377	7-1/4" Worm Drive Saw	330	189
6256	Top Handle Jig Saw	264	148
6490	10" Mitre Saw	444	255
6491	6490 w/ carbide blade & bag	532	275
6494	NEW 10" Compound Mitre Saw	444	309

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10" 40	69	39
LU82M010	Cut-off	10" 60	93	49
LU84M011	Comb	10" 50	78	42
LU85M010	Super Cut-off	10" 80	115	59
LM72M010	Ripping	10" 24	69	38
LU73M010	Cut off	10" 60	84	45
LU87M010	Thin Kerf	10" 24	72	39
LU88M010	Thin Kerf	10" 60	88	45
LU98M010	Ultimate	10" 80	128	68
LU91M010	Compnd Mitre	10" 60	88	54
F410	NEW Quiet Blade	10" 40	95	49
F810	NEW Quiet Blade	10" 80	135	74
TK303	7-1/4" Finishing	40	38	22
TK906	10" Combo	50	53	29
SD306	6" Dado - Carbide		215	112
SD308	8" Dado - Carbide		230	119
SD506	6" carbide w/case & shims		292	155
SD508	8" carbide w/case & shims		344	168
F0	1-3/4" x 5/8" Biscuit 1000 Qty		43	29
F10	2-1/8" x 3/4" Biscuit 1000 Qty		43	29
F20	2-3/4" x 1" Biscuit 1000 Qty		45	29
FA	Assorted Biscuits 1000 Qty		45	29
FB100	16 piece Forstner Bit Set		338	189
94-100	5 pc. Router Bit Door System		320	159
TR215	NEW 10" Slide Cmpd Mitre Saw		688	379
JS102	NEW Biscuit Jointer w/adj.fnc&cs		355	179

These FREUD Tools have a $30.00 Rebate !
Price shown is before rebate thru 3/31/94.

FT2000E	3-1/4 HP v/sp Plunge Router	410	205
JS100	Biscuit Jointer with case	334	164

MAKITA TOOLS

Model	Description	List	Sale
6070DW	3/8" v/spd Reverse Drill 7.2V	128	64
6172DWE	3/8" v/spd Drill Kit w/ 2 batt	220	109
5090DW	3-3/8" Saw Kit 9.6 volt	270	145
ML900	Incandescent Flashlight 9.6V	Sale	37
DA391DW	3/8" angle Drill Kit 9.6 volt	312	175

6012HDWE	2 speed Drill Kit w/2 batt.	243	135
6093DWE	6093DW Drill Kit w/2 batteries	270	139
6095DWE	6095DW Drill Kit w/2 batteries	139	
6201DWE	NEW 9.6V Drill Kit w/2 batt.	298	158
6211DWE	12V Drill Kit with 2 batteries	330	165
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28

5007NBA	7-1/4" Saw w/electric brake	263	135
5008NBA	8-1/4" Saw w/electric brake	346	195
B04510	1/4 sheet Pad Sander	106	59
9900B	3" x 21" Belt Sander w/bag	344	175
9924DB	3" x 24" Belt Sander w/bag	329	184
4301BV	Orb. var. spd Jig Saw 3.5A	292	158
JR3000V	var. speed Recip Saw w/case	252	135
LS1020	10" Mitre Saw 3.5 amp	630	355
9820-2	Blade Sharpener	394	205
N1900B	3-1/4" Planer with case	244	129
9514B	4" Disc Grinder 4.6 amp	111	59
B04550	1/4 sheet Pad Sander w/bag	98	52
DA3000R	3/8" Angle Drill	314	179
2708W	8-1/4" Table Saw	585	298
2711	10" Table Saw with brake	1067	565
6510LVR	3/8" Drill Rev. 0-1050 rpm	168	93
6820V	0-4000 rpm Drywall Gun	171	99
6013BR	1/2" Drill Rev. 6 amp	280	149
9401	4" x 24" Belt Sander w/bag	378	229
4302C	var. speed Orbital Jig Saw	351	199
5077B	7-1/4" Hypoid Saw	281	155
5007NB	7-1/4" Circular Saw 13 amp	232	124
5007NBK	5007NB Saw w/ plastic case	Sale	129
LS1011	10" Slide Compound Saw	946	509
3612BRA	3 HP Plungr Router w/ brake	524	175
LS1211	New 12" Slide Cmpd Saw	1550	865

SIOUX TOOLS

8030	New 3/8" var/spd Drill	250	145
8000	3/8" var/spd close qtr Drill	201	125
690	5" Air Random Orbit Sander	139	132

SENCO AIR NAILERS

SFN1	Finishing Nailer 1" - 2"	448	298
SN325	Nailer 1-7/8" - 3-1/4"	665	419
SLP20	New Pinner w/cse 5/8 -1-5/8"	399	269
SKS	Stapler 5/8" - 1-1/2"	390	269
SN70	Fram. Nailer Clip Hd 2"-3-1/2"	690	475
SN60	Fram. Nailer-Full Hd 2"-3-1/2"	638	445
SFN40	NEW Finish Nailer 1-1/4 - 2	1/2571	385

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	348
RN45	Coil Roof Nailer 3/4 - 1-3/4	845	409
N60FN-2	Finishing Nailer	650	335
T31	Brad Nailer	281	145
CWC100	1 HP Pancake Compressor	463	289

SKIL SIZZLERS

77	7-1/4" Worm Drive Saw	257	144
77M	NEW 77 Mag Worm Saw	300	164
2735-04	12 volt cordless Drill Kit	249	144
2736-04	2735-04 with keyless chuck	269	145
1605-02	Biscuit Joiner w/case	221	129
3400	10" Table Saw - Bench Top	270	178

PANASONIC CORDLESS

EY6205EQK	Same as EY6205BC but comes with **Ironman** battery	368	192
EY6207BC	NEW 12 volt 1/2" Drill w/keyless chuck var. speed w/15 min. charger & case	420	222
EY6282EQK	Var. spd 9.6 volt Drill with 15 min. charger, case & NEW **Ironman** battery	315	169
EY62821DKW	9.6 volt Drill Kit w/2 batt.	395	162

NEW PREDATOR DRILLS

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EY6100CRKW	NEW 12 volt Drill Kit with 2 batteries, 1 hour charger, & case	358	185
EY6100CQKW	Same as EY6100CRKW but has 15 minute charger	420	198
EY6100EQK	NEW 12 volt Drill Kit with NEW **Ironman** battery, 15 min. charger, & case	375	199
EY6100EQKW	Same as EY6100EQK but w/2 **Ironman** batteries	473	225

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List 194 Sale 104

0635SK
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DW945K-2	12V cdls Drill Kit w/2 batt	309	169
DW944K-2	9.6V cdls Drill Kit w/2 batt	283	165
DW610	1-1/2 HP 2 handle Router	274	149
DW411	1/4 sheet Palm Sander	97	58
DW100	3/8" Drill, 4 amp,0-2500 rpm	118	68
DW682K	**Biscuit Joiner with case**	429	219
DW705	12" Compound Mitre Saw	706	359
DW615	1-1/4 HP Elec. Plge Router	290	158
DW625	3 HP var. spd Plunge Router		269

DW625 Router comes with FREE DW6966 Fine Depth Adjuster.

DW675K	3-1/8" Planer with case	289	164
DW431	3 x 21 v/spd Belt Sander	331	179
DW444	6" Ran Orb Sander-PSA pad	266	149
DW443	DW444 w/hook & loop pad	266	149

NEW DEWALT CORDLESS DRILLS

DW952K	3/8" w/spd w/one 9.6V batt	280	159
DW953K	3/8" v/spd w/one 12V batt	306	175
DW962K-2	3/8"v/sp w/two 9.6V XRbatt	324	179
DW972K-2	3/8"v/sp w/two 12V XRbatt	352	189
DW991K	3/8"v/sp w/one 14.4V XRbatt	370	199

Above drill kits come w/charger & steel case!

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P12RA	Planer/Joiner	1940	989
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DS10DVAK	NEW 12V Cordless Drill Kit	393	199
NR83A	Fram Nailer 2 - 3-1/2 Full Head	700	395
NR83AA	Framing Nailer 2 - 3-1/2	750	419
NT65A	16 ga. Brad Nailer 1 - 2-1/2	610	335
NV45AB	Coil Roofing Nailer 7/8 - 1-3/4	750	415
NV83A	Coil Nailer 2 - 3-1/4	750	419

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T-SQUARE 52	52" Homeshop Fence	279	238
T-SQUARE 40	40" Homeshop Fence	259	208
T-SQUARE 28	28" Homeshop Fence	249	198

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Item#	Jaw Length	Open Cap	List	Sale	Box of 6
#0	8"	4-1/2"	19.76	11.75	58.00
#1	10"	6"	22.63	12.50	68.00
#2	12"	8-1/2"	25.95	14.50	78.00
#3	14"	10"	32.88	18.00	99.00

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50	3/4" Black Pipe Clamps	14.87	7.80	88.95
52	1/2" Black Pipe Clamps	12.40	6.70	71.50

BOSCH

Model	Description	List	Sale
1587VS	NEW Top Hand "CLIC" Jig Saw	292	149
1584VS	NEW Barrel "CLIC" Jig Saw	285	149
Bosch Metal Case for above Jig Saws		34	32
Bosch 30 blade assortment for Jig Saws			28.99

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1584VS or 1587VS with steel case and 30 Bosch blades **Sale 189**

1942	Heat Gun 600° - 900°	125	78
1272D	3" x 24" Belt Sander with bag	375	204
1273D	4" x 24" Belt Sander with bag	380	215
11-212VSR	Bulldog 3/4"SDS Rtry Drill	390	209
1347AK	4-1/2" Grinder w/cs & access.	185	109
1348AE	5" Grinder 8.5 amp	225	129
1194VSR	1/2" var. speed Hammer Drill	282	149
1194VSRK	above Hammer Drill w/case	313	169
1608	5.6 amp Laminate Trimmer	168	95
1609K	Lam Installers Kit with 1609	343	184
1609KX	Deluxe Installers kit	405	228
1604A	1-3/4 HP 2 Handle Router	250	139
1604AK	same as above w/cse & acc	318	185
1606A	1-3/4 HP D-handle Router	295	179
3258K	3-1/4" Planer with steel case	273	169
3270DVS	3 x 21v/spd belt sander w/ bag	270	165
1273DVS	var. spd 4" x 24" Belt Sander	415	219
1614	1HP Plunge Router	245	149
1614EVS	1-1/4HP v/spd Plge Rtr	283	159
1613	1-3/4 HP Plunge Router	316	169
1613EVS	2HP v/sp Plunge Router	194	
1615	3 HP, Plunge Router	430	259
1615EVS	3 HP v/spd Plge Router	505	278
1632VSRK	Recip Saw 8.4A orb-v/spd	225	154
3050VSRK	9.6V cdls v/sp Drill Kit comp	288	149
3051VSRK	3050VSRK w/keyless chuck	299	149
1370DEVS	6" Random Orbit Sander	427	224
3283DVS	5" Random Orbit Sander	169	98
3283DVSK	3283DVS Kit complete	199	118
B1650K	NEW Biscuit Joiner	289	155
B7000	NEW Corner Detail Sander	122	68
B4050	NEW In Line Jig Saw	199	115

AEG POWER TOOLS

Model	Description	List	Sale
TXE150	6" var/spd Ran Orb Sander	304	139
HBSE75S	3"x21" var/spd Belt Sander	309	178
BSPE100X	Top Handle Jig Saw w/case	286	159
FSPE100X	Barrel Grip Jig Saw w/case	274	159

BLACK & DECKER

1166	3/8" Drill 0-2500 rpm 4 amp	118	65
79-034	Workmate 400	181	109
2694	7-1/4" Super Sawcat w/case	285	158
2695	8-1/4" Super Sawscat w/case	328	175

DAVID WHITE

LP6-20	Sight Level package - 20x	310	195
LP6-20XL	LP6-20 w/9056 tripod & 7620 rod		259
LT8-300	Level Transit - 26x	695	445
LT8-300P	above Level w/optical plum	821	518
LT6-900	Level Transit - 20x	369	239
ALT6-900	Automatic Level - Transit - 18x	638	395
ALTP5-900	above Level w/tripod & rod	708	469
ALP6-18HD	above Level w/tripod & rod	570	375
ML100I	NEW Laser Level	1099	945
ML100	NEW Laser Level w/detector	1249	1075

RYOBI SPECIALS

TS-254	10" Mitre Saw	440	209
RE600	3 HP Plunge Router	500	228
BE321	3" x 21" var. spd Belt Sander	310	139
TFD222VRK	12V cordless Drill Kit	365	155
TFF100	Flashlight uses 7.2,9.6,12v battery		19.95
BT3000	10" Table Saw with stand	1125	529
TSS220	8-1/2" Slide Comp. Saw	966	445
DS1000	Detail Sander	90	44
AP12	12" Bench Planer	884	395
BS900	9" Bench Band Saw	340	169
OSS450	**Oscilating Spindle Sander**	340	159
ML618	NEW Mini Lathe var/spd	418	225
DC500	NEW Detail Carver	120	64

LAMELLO BISCUIT JOINTERS

TOP 10	"Simply the Best"	699	538
STANDARD 10	"Professionals Choice"	499	399

Msx636 FEIN	Triangle Sander Kit	Sale	185
LPN672 PONY	Air Palm Nailer w/glove	Sale	94.99

QUAL-CRAFT PRODUCTS

2200	Pump Jack	79	58
2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	21
2204	Workbench & rail holder combo	53	39

Buy any 6 (can be assort.) deduct 10%

2601	Wall Jack	167	108

Lots of 4 deduct additional 10%

PORTER CABLE

690	1-1/2 HP Router 8 amp	260	138
691	1-1/2 HP Router D-handle	285	155
695	1-1/2 HP Router/Shaper	400	223
696	HD Shaper Table	230	129
351	3" x 21" Belt Sander w/o bag	280	154
352	3" x 21" Belt Sander with bag	290	159
360	3" x 24" Belt Sander with bag	365	194
361	3" x 24" Belt Sander w/o bag	345	189
362	4" x 24" Belt Sander with bag	380	205
315-1	7-1/4" Top Hdle Circular Saw	225	118
97751	1/2" v/spd Hammer Drill w/cse	270	155
9118	Porta Plane Kit 7 amp	390	215
505	1/2 sheet Pad Sander	230	128
6611	3/8" var. speed Drill 5.2 amp	220	125
6614	1/2" var. speed Drill 0-750 rpm	230	128
6615	7514 with keyless chuck	230	128
7549	Top handle Jig Saw 4.8 amp	270	135
330	Speed Block Sander 1/4 sheet	110	60
555	Plate Biscuit Jointer with case	320	159
556	555 jointer w/5556 tilt fence	Sale	165
345	6" Saw Boss 9 amp	190	104
9345	345 comp. w/cse & carb blde	220	124
9647	TIGER CUB Recip. Saw	210	119
9637	Full var/spd Recip Saw 8 amp	270	148
7519	3-1/4 HP Router 2 Handle	445	239
7518	3-1/4 HP 5 speed Router	510	268
7538	3-1/4 HP Plunge Router	445	239
7399	5.6 amp Drywall Cutout Unit	140	84
7310	5.6 amp Laminate Trimmer	165	95
97310	Laminate Trimmer Kit comp	360	198
7335	5" var. spd Rndm Orbit Sndr	245	132
7336	6" var. spd Rndm Orbit Sndr	250	137
73333	Dust Collection system	31	24.50
693	1-1/2 HP Plunge Router Base	320	174
6931	Plunge Router Base	125	77
7539	3-1/4HP v/spd Plunge Router	510	269
9852	12V 3/8"Drill w/cse 0-1000rpm	280	154
9853	9852 with keyless chuck	280	154
9855	12V 1/2" 2 spd,v/sp Drill w/cs	335	188
8500	12V battery for above drills	Sale	45

New Tools by Porter Cable

332	Palm Grip Rndm Orbit Sander	120	69
333	above Sander with dust bag	135	75
334	333 Sander with PSA pad	135	74
340	1/4 Sheet Orb Sndr w/dust p/u	89	55
352VS	3x21 Belt Sander w/bag v/spd	305	169
7116	24" Omni Jig	535	294
550	Pocket cutter with case	330	179
310	Production Laminate Trimmer	250	145
7700	10" "Lazerloc" Mitre Saw	634	339
347	7-1/4" "Framers" Circ Saw	225	129
743	347 Saw - left hand version	225	129
9743	NEW 743 Saw with case	255	148
9347	NEW 347 Saw with case	255	148
447	347 Saw with brake	245	134
843	447 Saw-left hand version	245	139

FREE FREIGHT TO THE CONTINENTAL STATES ON EVERY ITEM • GIFT CERTIFICATES NOW AVAILABLE

FINISHING TOUCHES

PICKING THROUGH PALLETS

Products made from recycled hardwood pallet lumber turned into butcher-block panels by Big City Forest's workers include planters and chairs, shown *above*, and parquet flooring.

Half of the annual hardwood timber harvest in the U.S. becomes pallets. And about half of those pallets get discarded, reports David Muchnik. He should know. As the chairman and CEO of Big City Forest, a pallet-recycling program of Bronx 2000, a community-based, nonprofit organization in Bronx, New York, he's doing something to stem this waste.

Big City Forest receives damaged, used pallets from local businesses. Workers dismantle the pallets and salvage most of the lumber to make new pallets. They remanufacture the best stock, though, into butcher-block furniture, parquet flooring, and other higher-value wood products.

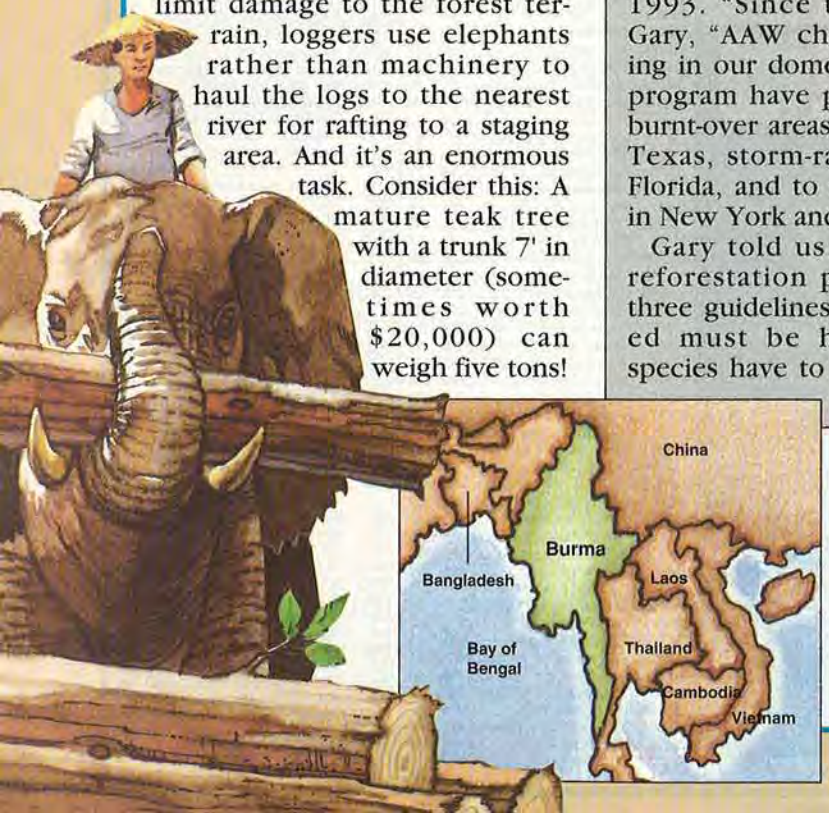
During a 20-month pilot phase that ended last February, Big City Forest saved local companies $528,000 on waste disposal. The effort also diverted 150,000 tons of wood from landfills, incinerators, and vacant lots, and reclaimed over 1 million board feet of lumber. "That amount of wood is equivalent to the harvest from 225 acres of hardwood timberland," David notes.

The program has helped on the labor front, too, by creating on-site jobs and training opportunities. Plans are underway to build on this success story, according to Muchnik, and woodworkers in the New York City area could be helpful with developing programs. For information, contact David Muchnik, Bronx 2000, 1809 Carter Ave., Bronx, NY 10457. Call 718/731-3931.

Oh, my aching trunk!

The Indochinese country of Burma boasts the world's largest teak forests. In these forests—which contain 75 percent of the global teak stock—you'll also find the world's largest herd of working elephants.

The approximately 6,000 behemoths do all the heavy lifting in this Texas-sized nation that depends so much on teak for its foreign exchange. In order to limit damage to the forest terrain, loggers use elephants rather than machinery to haul the logs to the nearest river for rafting to a staging area. And it's an enormous task. Consider this: A mature teak tree with a trunk 7' in diameter (sometimes worth $20,000) can weigh five tons!



Woodturners ride the reforestation bandwagon

Thanks to the tremendous efforts of the American Association of Woodturners, more than 50,000 young native hardwoods now grow to provide shade, clean air, and natural beauty in public areas across the nation. According to S. Gary Roberts of Austin, Texas, an AAW board member and reforestation coordinator, the effort kicked into high gear in the fall of 1993. "Since that time," says Gary, "AAW chapters participating in our domestic reforestation program have provided trees to burnt-over areas in California and Texas, storm-ravaged places in Florida, and to many city streets in New York and New Jersey."

Gary told us that the AAW's reforestation program follows three guidelines: The trees planted must be hardwoods; the species have to be indigenous to the region where they're planted; and the planting area must be a public place, such as a city or county park, highway right-of-way, or national forest. "We receive trees from the National Tree Trust, a government-funded agency in Washington, D.C.," notes Gary. "They provide the tree seedlings free. It's a great thing. The AAW has 64 chapters and 4,400 members nationwide, and we're just getting started. I'd like to see more woodworking groups in this program."

For information about the AAW's reforestation effort, write S. Gary Roberts, AAW, 8613 Honeysuckle Terrace, Austin, TX 78759. To learn more of the National Tree Trust, drop a line to 11220 G St. N.W., Suite 770, Washington, DC 20005. Or call 800/846-8733.

WHY THE ROMANS WORE THEIR LAURELS

Roman emperors wore crowns made of laurel branches because the laurel tree was said to be sacred to the god Apollo. It was therefore immune to lightening.

Photographs: Big City Forest Illustrations: Jim Stevenson

Caution: This lathe could be habit forming.

Turn stock 36" between centers, 12" over the cast iron bed or swivel the headstock 90° for outboard turning of work up to 16" diameter. Variable speed (500-2000 rpm) allows proper control for out-of-round and offset turning or roughing of green or seasoned wood through final finishing stages.

Anyone who works on a lathe will tell you that turning quickly becomes addictive. That wondrous treasures can be made from otherwise junk wood. That the learning curve is rapid, once you've got the basics. And that you'll probably outgrow your first lathe.

For the most part, we'd agree. Which is exactly why we set out to design the Delta 12" Variable Speed Wood Lathe.

A lathe priced low enough to get you hooked, yet hefty enough to satisfy a rapidly growing habit. With features that will please even a long-time turner. With power and comfort and precision enough to grow on.

For the name of your nearest Delta dealer, call Delta International Machinery Corp.: 800-438-2486. In Canada, call: 519-836-2840.

THE POWER OF THE PROS

DELTA
WOODWORKING MACHINERY
FOR 75 YEARS

Delta is proud to nationally fund these two PBS programs for woodworkers.

The New Yankee Workshop *hosted by Norm Abram.*

The American Woodshop *with Scott Phillips.*

Delta is a Pentair Company.

DEEP DOWN INSIDE THIS PIECE OF CHERRY IS A QUEEN ANNE HIGHBOY SCREAMING TO GET OUT.

It's our feeling that every piece of wood is a project waiting to happen. And that inside every woodworker is the urge to turn that plank of cherry or maple or walnut into something beautiful, if only he had the right tools.

That's where we enter the picture. At Delta, we've been building professional quality woodworking tools for 75 years. The most extensive line of stationary and benchtop tools in the industry. For the professional, the do-it-yourselfer and everyone in between. Which is why we make five different scroll saws, nine table saws, five band saws–the list goes on and on.

We've spent our entire history satisfying the most demanding craftspeople–building quality into every tool we make. Without compromise.

The tools you see here have the same heft and precision we put into our professional tools. Yet they're priced to fit nicely into any shop. You don't have to be a pro to work like one.

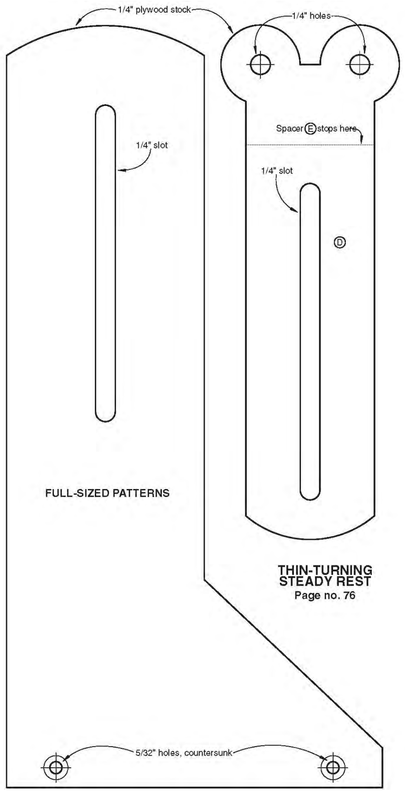
So before you start whacking away at that beautiful piece of cherry with a less than beautiful tool, call for the name of the nearest dealer, home center or hardware store carrying Delta tools. Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840. Delta is a Pentair Company.

A shopful of quality. Delta 14" Drill Press, 14" Band Saw, Deluxe 6" Jointer, Contractor Saw II, 12" Portable Planer and 16" Scroll Saw Type II.

Delta is proud to nationally fund these two PBS programs for woodworkers. The New Yankee Workshop *hosted by Norm Abram and* The American Woodshop *with Scott Phillips.*

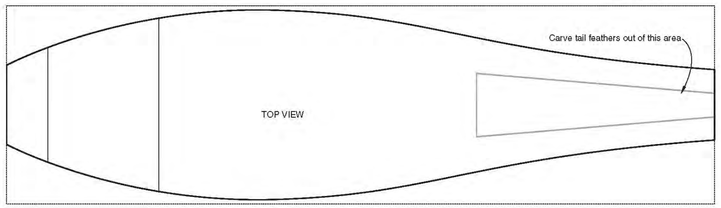
THE POWER OF THE PROS

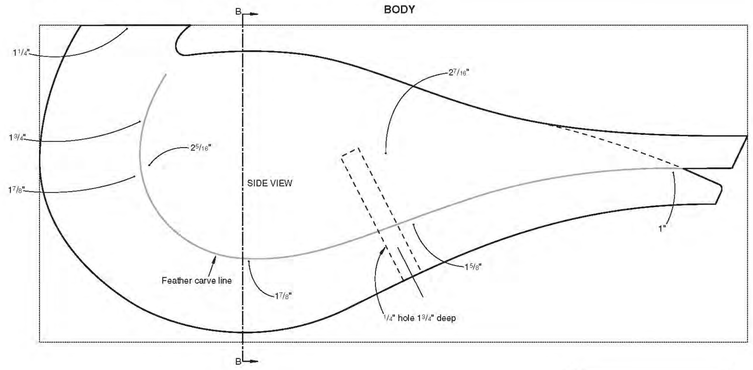
DELTA
WOODWORKING MACHINERY
FOR 75 YEARS

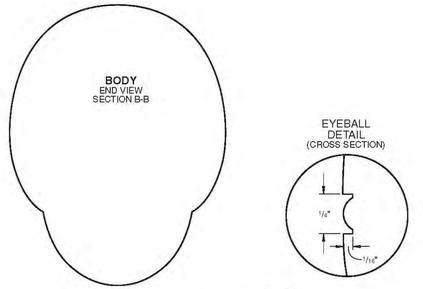


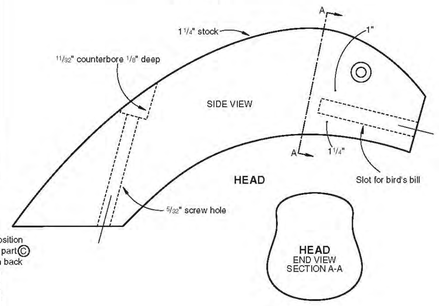
THIN-TURNING STEADY REST
Page no. 76

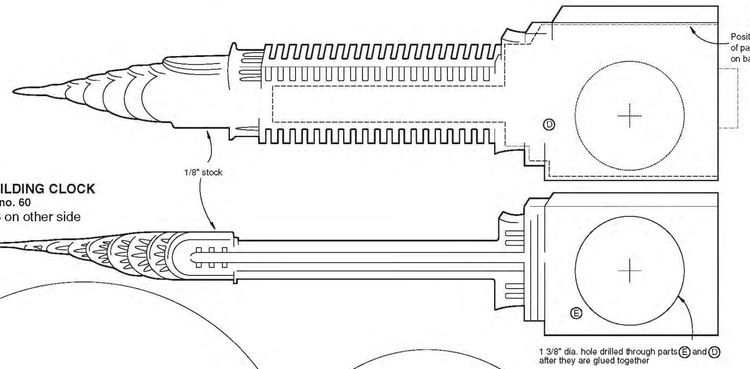
DOWITCHER CARVING
Page no. 42



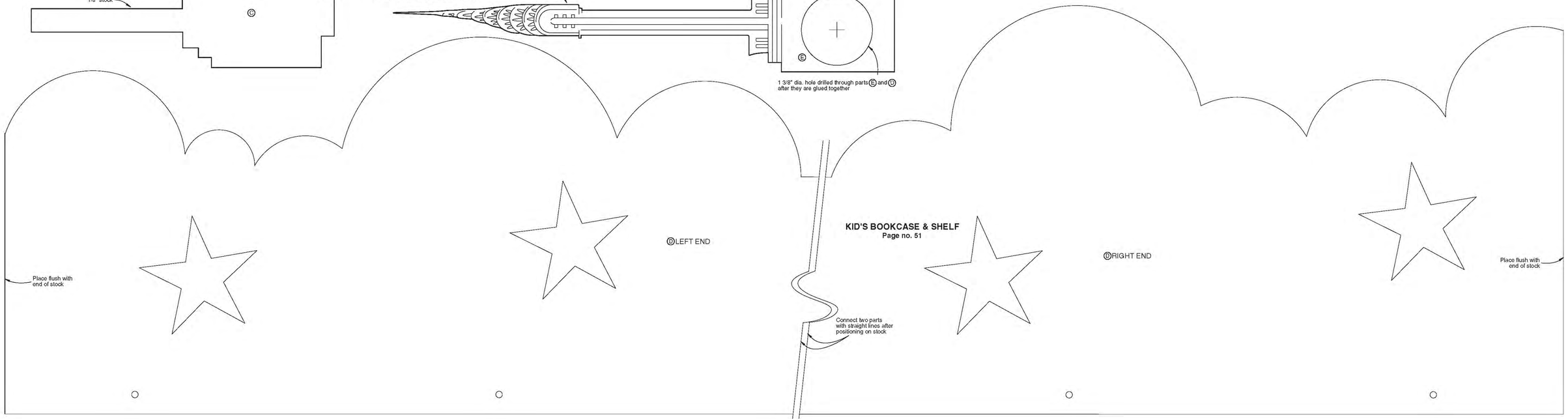








CHRYSLER BUILDING CLOCK
Page no. 60
Parts A and B on other side


Place flush with end of stock
ⒹLEFT END
Connect two parts with straight lines after positioning on stock
ⒹRIGHT END
Place flush with end of stock

KID'S BOOKCASE & SHELF
Page no. 51

Better Homes and Gardens®

WOOD® PATTERNS™

Full-sized for your woodworking convenience

FEBRUARY 1995 **ISSUE 77**

Dear Reader: As a service to you, we've included full-sized patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

- Dowitcher carving
- Kid's playroom furniture
- Corian plantstand
- Chrysler Building clock
- Thin-turning steady rest

Page 60

Page 54

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FULL-SIZED PATTERNS

Ⓒ CHAIR STRETCHER

CHRYSLER BUILDING CLOCK
Page no. 60
Parts C, D, and E
on other side

1/8" stock

Place part Ⓑ here

Ⓑ

Ⓐ

CORIAN PLANT STAND
Page no. 54

Ⓔ

9/16" hole

¼" thick Corian

9/16" hole

Ⓔ
TABLE LEG

KID'S FURNITURE
Page no. 46

Ⓑ
MOON PATTERN
(BOOKCASE
AND SHELF)

STAR PATTERN
(FOR PLAYING PIECE
FOR TABLE
CHECKERBOARD)

Ⓐ
CHAIR SIDE

1

2

3

4

Blade start hole

BOOKCASE SIDE CUTOUT PATTERNS

Ⓑ
CHAIR BACKREST

Ⓐ
BOOKCASE SIDE PATTERN